INVESTIGATING MEDIEVAL PHILOSOPHY • 2

Methods and Methodologies

Aristotelian Logic East and West, 500–1500

Edited by

Margaret Cameron and John Marenbon

BRILL

Methods and Methodologies

Investigating Medieval Philosophy

VOLUME 2

Methods and Methodologies

Aristotelian Logic East and West, 500–1500

Edited by
Margaret Cameron and John Marenbon

BRILL

LEIDEN • BOSTON
2011

This book is printed on acid-free paper.

Library of Congress Cataloging-in-Publication-Data

Methods and methodologies : Aristotelian logic East and West, 500–1500 /
edited by Margaret Cameron and John Marenbon.
p. cm. — (Investigating medieval philosophy, ISSN 1879-9787 ; v. 2)
Includes bibliographical references (p.) and index.
ISBN 978-90-04-18885-3 (hardback : alk. paper)
1. Logic, Medieval—Congresses. 2. Muslim logicians—Congresses. 3. Aristotle—
Congresses. I. Cameron, Margaret (Margaret Anne) II. Marenbon, John.

BC34.M46 2011
160.92—dc22

2010041733

ISSN 1879-9787
ISBN 978 90 04 18885 3

CONTENTS

PART TWO

METHODOLOGIES

LIST OF CONTRIBUTORS

Andrew Arlig is Assistant Professor of Philosophy at Brooklyn College, City University of New York. He has written articles on medieval mereology and metaphysics, including the *Stanford Encyclopedia* entry on 'Medieval Mereology' and 'The Metaphysics of Individuals in the Opuscula Sacra' in *The Cambridge Companion to Boethius* (2009).

Jennifer Ashworth is Professor of Philosophy (Emerita) at the University of Waterloo. She is the author of many articles on medieval and post-medieval logic. She is author of *Language and Logic in the Post-Medieval Period* and has recently contributed articles on medieval logic and semantics to *The Cambridge Companion to Medieval Philosophy* (2003) and *The Cambridge History of Later Medieval Logic* (2010).

Amos Bertolacci is Associate Professor of Islamic Philosophy at the Scuola Normale Superiore di Pisa. In addition to his many articles on medieval philosophy, he has written *The Reception of Aristotle's* Metaphysics *in Avicenna's* Kitāb al-Šifāʾ: *A Milestone of Western Metaphysical Thought* (2006) and is currently working on *The Arabic Sources of Albertus Magnus' Commentary on the* Metaphysics: *Avicenna and Averroes*.

Margaret Cameron is Canada Research Council Chair in Philosophy at the University of Victoria. She is author of "Boethius on utterances, thoughts and reality" and "Is there a theory of meaning in the middle ages" (in the forthcoming *Oxford Handbook to Medieval Philosophy*). She is currently working on several projects in the history of medieval logic and philosophy of language.

Matteo di Giovanni is currently pursuing a second doctorate in Graeco-Arabic Studies at the Department of Near Eastern Languages and Civilisations, Yale University. He is author of 'Demonstration and First Philosophy. Averroes on *Met.* Zeta as a Demonstrative Examination (*al-faḥṣ alburhānī*)' (2009) and 'Substantial Form in Averroes's *Long Commentary* on the *Metaphysics*' (forthcoming).

Sten Ebbesen works at the SAXO Institute in the Department of Greek and Latin at the University of Copenhagen. He is the author of many books and articles on medieval logic, several of which have been recently collected in *Greek-Latin Philosophical Interaction: Collected essays of Sten Ebbesen, Volume 1* (2008) and *Topics in Latin Philosophy from the 12th–14th centuries: Collected essays of Sten Ebbesen, Volume 2* (2009).

Christophe Erismann is SNSF Professor of Medieval Philosophy at the Université de Lausanne. Among his publications are 'The Trinity, Universals, and Particular Substances: Philoponus and Roscelin', *Traditio*, 53 (2008), 277–305; 'Immanent realism. A reconstruction of an early medieval solution to the problem of universals', *Documenti e studi sulla tradizione filosofica medievale*, 18 (2007), 211–229; 'The Logic of Being. Eriugena's dialectical ontology', *Vivarium* 45 (2007), 203–218.

Gyula Klima is Professor of Philosophy at Fordham University. He is a specialist in medieval logic and metaphysics. Recently he has contributed articles on medieval semantics to the *Handbook of the History of Logic* (2008) and *The Cambridge History of Later Medieval Philosophy* (2010). He is editor of John Buridan's *Summulae de Dialectica* (2001).

Simo Knuttila is Professor of Theological Ethics and Philosophy of Religion at the University of Helsinki. His books include *Modalities in Medieval Philosophy* (1993) and *Emotions in Ancient and Medieval Philosophy* (2004), and he has written many articles on medieval logic.

John Marenbon is Senior Research Fellow at Trinity College, Cambridge. His recent work includes *Medieval Philosophy: An historical and philosophical introduction* (2006). 'The Latin Tradition of Logic to 1100' and 'Logic at the Turn of the Twelfth Century' in the *Handbook of the History of Logic, Volume 2 Mediaeval and Renaissance Logic* (2008).

Christopher J. Martin is Associate Professor of Philosophy at the University of Auckland. He is author of many articles on medieval logic, including recently the entry 'History of Logic: Medieval Logic' in *The Encyclopedia of Philosophy* (2006) and 'Aristotle and the Logic of Consequences: The Development of the Theory of Inference in the Early Thirteenth Century' (2005).

Paul Thom is Honorary Visiting Professor at the University of Sydney. In addition to his many articles on medieval logic, he has written *Medieval Modal Systems: problems and concepts* (2003) and *Logic and Ontology in the Syllogistic of Robert Kilwardby* (2007).

PREFACE*

This collection had been planned as the first volume in the series, 'Investigating Medieval Philosophy': its methodological enquiries about studying medieval logic were to set the analytical tone for this new Brill venture. No one who has experience of editing collective volumes will be surprised that it has slipped back to second place, and perhaps the relegation is a fortunate one. As the first volume, it might have given the false impression that the series will be centred on logic, and there would also have been the risk of obscuring its own very particular coherence, point and challenge. *Methods and Methodologies* explores two sorts of general question about studying the Aristotelian tradition of logic. The first sort, that addressed by the chapters on methods in the first half of the book, is directly about the medieval logical commentaries, treatises and handbooks. How did medieval authors in the different traditions, Latin and Arabic, go about their work on Aristotelian logic? In especial, how did they themselves conceive the relationship between logic and other branches of philosophy and disciplines outside philosophy? The second sort of question is about methodologies, the subject of the chapters in the second half of the book: it invites writers to reflect on their own and their colleagues' practice as twenty-first century interpreters of this medieval writing on Aristotelian logic.

Part One begins with a pair of chapters on methods in Arabic logic. They discuss the two best known of all philosophers in the Arabic tradition, Avicenna and Averroes, and they are both concerned with the relationship between logic and metaphysics. Amos Bertolacci looks at the instances where, in his fullest philosophical encyclopaedia, the *Shifāʾ*, Avicenna treats the same doctrine in his discussion of logic and then, later on, in the section on metaphysics. Avicenna had a hierarchical conception of knowledge, according to which metaphysics is distinct from, and superior to, logic. Sometimes the parallel passages between the logic and metaphysics of the *Shifāʾ* bear out this position, and an

* Since Margaret Cameron has written the Introduction, this short preface is the work of the other editor, John Marenbon. I would like, however, to thank Margaret Cameron for her help towards it.

idea will be broached in logic, but taken up and given its proper foundation only in the section on metaphysics. But Bertolacci also shows, more surprisingly, that sometimes there takes place what he describes as an 'ontologization' of logic, in which a topic shared between logic and metaphysics receives its fullest exposition in logic, and one which delves into matters of existence, normally the province of metaphysics. As on so many points, Averroes turns out, according to Matteo di Giovanni, in one respect to have a strikingly different conception of the relationship between logic and metaphysics from his great predecessor. Whereas Avicenna underlines the distinctness of each subject, even when discussing the same topic, Averroes believes that logic and metaphysics have the same subject-matter. This position is combined with the another view, perhaps not so different from that which Bertolacci discerns in Avicenna: logic is seen not just a tool, but as capable of establishing positive doctrines, which other subjects can use as their starting-points.

Sten Ebbesen is also concerned with the delimitation of logic as a subject. He concentrates on the Latin authors of the thirteenth century. They recognized the overlap of logic with metaphysics but, on Ebbesen's account, although some thirteenth-century speculated on whether the doctrine of the Categories does not belong properly with metaphysics, none seriously contemplated removing Aristotle's *Categories* from the list of logical textbooks. Ebbesen argues that it is Aristotle's *Organon* – without the *Rhetoric* and *Poetics* sometimes fleetingly included with it under Arabic influence – that defines the scope of the subject for Latin writers of the period. The medieval novelties – the *logica modernorum* – were considered, he contends, merely an extension of Aristotle. In Ebbesen's view, the boundaries between logic and theology were very solid:

> When it comes to logic in the thirteenth century I believe there is a fairly impenetrable wall, at least between logic and theology. It was not yet fashionable to propagate some fancy *logica divina* with different rules from those of ordinary logic, and in the few cases in which logicians felt they had to take theology into account, they did so with loud misgivings, as when they had to find an excuse for accidents that floated in the air with no substantial support.

Christophe Erismann's contribution suggests that, however much this wall might have been in solidified by the 1200s, it had been far more porous just over a century earlier. The theme Erismann discusses might seem to be on the border between logic and metaphysics, but

far away from theology. He is discussing the Principle of Instantiation, rejected by Plato and accepted by Aristotelians, that every universal must be instantiated in at least one particular. A careful look at how Anselm of Canterbury and Odo of Tournai, writing late in the eleventh century, presented the principle and the language they used leads back to Boethius and the Christological disputes of the sixth century. The Monophysites had enunciated a theological variant of the Principle of Instantiation: 'there is no nature that is not hypostatized' (instantiated in a particular substance). The Monophysites used this premise to argue that Christ, who is a single hypostasis, can have no more than one nature. The partisans of Chalcedonian orthodoxy, however, were able to accept the premise, but argue that more than one nature can be hypostatized in the same substance. Erismann's study does not just throw light on the important, but well-recognized area of how Christian theologians used Aristotelian logic. It also makes clear that the terms in which the leading late eleventh-century philosophers discussed universals were partly shaped by a theological, as well as a logical, tradition.

Another of logic's borderlines is with rhetoric. It has often been claimed that, in the sixteenth century, under the influence of humanism, logic drew closer to rhetoric, and that there was less emphasis on syllogistic argument, more on merely probable forms of argument, linked to the doctrine of the Topics. Jenny Ashworth puts such claims to the test by examining the work of two sixteenth logicians, Domingo de Soto and Petrus Fonseca, who preserve enough of the medieval heritage for it to be possible to measure what, if any, was the impact of humanism on it. Her conclusion is that, although in the manner of their writing de Soto and Fonseca show the influence of their times, for both men logic remains closely centred around syllogistic. Fonseca allows only a very limited place for probabilistic argumentation; de Soto none at all.

Gyula Klima's paper on Peter of Spain's *Summulae logicales* and the *Summulae de dialectica* which John Buridan wrote, a century later, as a commentary on it does not, like the other papers in this section, consider the methods proper to logic by examining how it relates to the other disciplines at its boundaries. Rather, Klima poses an internal question about method. Peter and John, as is well known, take up very different positions about universals: Peter is reputed to be a realist, Buridan a nominalist. What is involved in their taking up these positions? According to Klima, the difference between the two logicians can best be understood as one in their semantics. Peter sets

up a one-to-one correspondence between different semantic categories and different types of entity. Buridan's approach is more 'adverbial': the richness of sentences' meanings is preserved by having them refer in a variety of different ways to a much more limited range of entities. Peter avoids being an extreme realist, because he does not insist on the reality of all the entities his semantics requires. Both he and John are types of conceptualist, but there is a sharp difference in their theories of universals, and it is brought out by the semantic analysis.

Klima's discussion, though about method, has implications for methodology, which he draws out at the end of his chapter. In particular, it shows that, for medieval authors, ontological commitment is not, as Quine would want it, a matter of what is quantified over. An author might, like Peter of Spain, have a highly populous 'universe of discourse', but a very restricted set of entities which he regards as making up the real universe. Klima's piece thus provides the beginnings of a bridge between the two sections of this book, which is completed by Simo Knuuttila's chapter. Knuuttila is writing about interpreting logic, as done both by contemporary historians of logic and by the medieval logicians themselves. They too were in the position of interpreters – of Aristotle's logic. But they made no clear distinction between giving an accurate account of what Aristotle himself meant and providing what they considered the correct solution to the problem under discussion. It is as if Aristotle's text, properly understood, states the ideal theory, and so once the interpreter has worked out this ideal theory, it can be attributed to Aristotle. No contemporary writer can enjoy such historical innocence. But, as Knuuttila explains, different writers balance fidelity to the medieval texts with an interest in contemporary logic in different ways, some of them coming close to a medieval-style reading of an ideal into the authors they treat, others using sophisticated contemporary language in a way that serves the purposes of scrupulous historical reconstruction.

Paul Thom is one of the contemporary interpreters singled out by Knuuttila as using contemporary logical tools in the service of an accurate, rather than an idealized, interpretation of medieval logic. Thom's own chapter explains some of the criteria he uses to guide himself in these task. He defends formalization as an interpretative tool. Two of its elements, axiomatization and symbolization, need to be used with great care in order to avoid misreadings. Thom also defends the use of its third element, the conceptual translation of pre-formal material into the framework of a formal logical theory, when it is handled

with sufficient skill and caution: there is, indeed, room to exploit the flexibility of today's logical languages and to exercise imagination in finding formal ways of representing distinctions that the medieval writers may have made less formally. But Thom finishes by reminding his readers that there is another aspect to historical interpretation that should not be neglected: the historical interpreter needs to think about the relationship between the text in question and other aspects of its time – other texts, but also the cultural and social circumstances in which it was conceived.

The other two chapters of Part Two carry on the dialogue begun by Knuuttila and Thom. Chris Martin sets out here, more fully and in greater detail than previously, a central theme in his understanding of the history of logic. Genuinely propositional logic, he argues, requires a distinction between force and content; otherwise the logician cannot develop a system, but is restricted to a case by case account of each of the particular forms of the proposition. Geach, he observes, calls this 'the Frege point' (though Frege himself never articulated it very clearly). From the label, it might seem like a distinction that is peculiar to the contemporary tradition of logic, which Frege contributed so much to founding. Martin shows, however, that although neither Aristotle nor Boethius, understood the point, it was fully grasped by Abelard at the beginning of the twelfth century. Martin's investigation has important methodological implications. Historically, it shows is that, at least in some cases, contemporary logic has merely rediscovered ideas already developed by medieval logicians. It follows that here the historians are not guilty of anachronism when they talk about medieval logic using contemporary terms, since these terms – in the understanding they embody, though not verbally – are faithful to the medieval logic texts. Moreover, in Martin's view, it is only by understanding the discoveries of contemporary logic that we can recognize the achievements of the medieval logicians in these cases: unless *we* understand what propositionality is, we cannot see what a breakthrough Abelard made by reaching a conception of it.

Whereas the other participants approach the debate about methodology with it in mind that their main aim is contribute to the history of philosophy, Andrew Arlig's contribution offers a different perspective on the whole debate: that of the contemporary philosopher. What does someone working in contemporary philosophy have to gain from looking at medieval discussions? Arlig gives an answer with regard to a particular topic on the borderline between logic and metaphysics,

mereology. Is there a medieval Mereology, he asks: do medieval discussions of parts and wholes constitute a theory? He answers by showing how medieval conceptions of parts conform to four rules set out by a leading contemporary mereological theorist, Peter Simons. Not only is there a medieval Mereology, but it may, Arlig thinks, help contemporary theorists in their work. Contemporary mereologists claim – unconvincingly he thinks – to be ontologically neutral. Medieval Mereology, by contrast, is 'unapologetically constrained by metaphysical and physical principles.' Although philosophers now are likely to want to adopt different such principles, medieval Mereology provides a model for developing an account of parts and wholes based on metaphysical and physical, as well as logical, considerations.

Margaret Cameron's Introduction – first, of course, in the order of chapters – is placed last here, because its role in tying together the various contributions and the two parts will be clearer now that the scope of the book has been explained. She begins with a detailed study of how historians of logic have discussed Ockham's theory of supposition since the 1950s. Most analyses have tried, in one way or another, to present supposition as a theory, or proto-theory, of quantification which can, therefore, be formalized using standard contemporary logic. Obstacles have been encountered and, as Cameron explains, often negotiated only at the cost of leaving Ockham's text far behind. Cameron lays special emphasis, however, on a couple of interpretations in which wider questions have been posed than that of whether or not supposition can be seen as quantification – questions such as how supposition fits into Ockham's system of logic as a whole, or why medieval philosophers wanted a system of supposition at all. The second part of Cameron's Introduction sets out a typology of approaches to the history of medieval logic. All the studies of Ockham on supposition she has discussed – even those which pose the wider questions – fall into the genre of Rational Reconstruction, in which historical figures are made to join with us in conversation. By contrast, Historical Reconstruction – witnessed in most of the contributions to Part One of the volume – aims 'to present, as accurately as possible, the logical theories (and practices) of the past *on their own terms*.' She also lists two less used, but perhaps valuable approaches. There is the History of Applied Logic – the study of how and where logic was used; and there is the Social History of Logic which, in her formulation, 'seeks to explain the aims and uses of medieval logic by looking more broadly at its *social, cultural*, and *historical contexts*.'

The original stimulus for this volume – though many of its chapters have been specially written or re-written – was a conference held in Cambridge in 2007, as part of the series, Aristotelian Logic, East and West, 500 to 1500. The series was financed by the British Academy, with additional support from CRASSH (the Centre for Research in the Arts, Social Sciences and Humanities of Cambridge University) and Trinity College, Cambridge. We are very grateful to all these institutions. The conferences on Aristotelian Logic were one side of a larger project, which I organized in conjunction with Tony Street. The other side, a research project based at CRASSH, was financed by the AHRC, with Tony Street as its principal investigator. This volume is particularly indebted to the AHRC's generosity, since Margaret Cameron, who organized the conference with me and is the other editor, was supported by them as a researcher on the project. We should also like to thank the referee for his valuable comments and suggestions.

John Marenbon

METHODS AND METHODOLOGIES: AN INTRODUCTION[1]

Margaret Cameron

Medieval philosophers studied historical texts in an effort to understand them and to use them for their own investigations and problems. They used the logical tools provided by Aristotle's *Organon* and, when needed, supplemented them with additional resources, such as other ancient texts (e.g., Porphyry's *Isagoge*) and new logical techniques and theories developed by medieval logicians themselves, referred to as the 'logic of the moderns' (*logica modernorum*).[2] When scholars today, working hundreds of years after the medieval tradition and with a very different logical framework, try to interpret medieval logic, we find that the task is not at all straightforward. How to study logic from the past itself becomes a philosophical, or metaphilosophical, challenge. In 2000, P. Spade only half-jokingly asked, 'Why Don't Medieval Logicians Ever Tell Us What They're Doing? *Or*, What is this, a conspiracy?'. Spade outlined four later developments in medieval logic (obligations, exponibles, proofs of propositions, and supposition doctrine) and raised serious questions about the hidden or unexpressed motivations for these logical theories and practices. Spade's concern is specifically with these later developments, but there is an important sense in which it is true for many parts of the medieval logical tradition.

> [W]hat has *not* been told – or at least has not been told often enough – is the fact that, in case after case of the new logical genres that grew up in this later period, *we simply don't know what was really going on.*

[1] I would like to thank the Arts and Humanities Research Council for a grant which funded a fellowship allowing me to research and to participate in the 'Aristotelian Logic East and West: 500–1500' project organized by John Marenbon and Tony Street at Cambridge University from 2006–2008. The work collected in this volume is one part of that project. I would like to thank Catarina Dutilh Novaes, John Marenbon, Klaus Jahn, Michael Raven and especially Andrew Arlig for helpful advice on this chapter.

[2] For general studies and overviews, see De Rijk 1962–7, Kretzmann et al. 1982, Yrjönsuuri 2001, Gabbay and Woods 2008.

> We do know the important texts, in most cases. We know the mechanics and details of many of the new logical theories and techniques that emerged during this period. We even know of theoretical disagreements that arose in some of these theories, and we know by and large who lined up on which side of these disagreements. We know in fact quite a lot about the logic of this period. But what we too often don't know is: *Just what did they think they were doing*?[3]

Historians of medieval logic have not thrown up their hands in despair. But they have noticed that *our* difficulties in understanding the various medieval logical projects and the motivations behind them require us to be more attentive, first, to the methods employed by medieval logicians themselves, to observe them (so to speak) in their own, native environments, going about their business for their own ends. And we are compelled, secondly, to be more attentive to our *own* methodological strategies used for the interpretation of medieval logic. The articles in this volume are intended to make explicit one or the other of these two requirements, first by considering some of the methods used by medieval logicians themselves, and second by reflecting on our methodological practices used to interpret and understand it.

In this introductory essay, I would like to illustrate some of the challenges that have confronted philosophers of medieval logic in recent years. To do so, I will first provide a brief sketch of the efforts to interpret William of Ockham's doctrine of supposition as a doctrine of quantification along the lines of modern standard logic. While other medieval philosophers' logical theories have received attention by modern philosophers working in the analytic tradition, attention paid to Ockham's supposition theory has outstripped most else. Clearly, Ockham's doctrine of supposition is part of the '*logica modernorum*', a subject which is beyond the scope of the other chapters of this book, which take as their topic the medieval interpretation of Aristotle's logic (both the old logic (*logica vetus*) and the new logic (*logica nova*)). One might wonder about the relevance of a study of an indigenously medieval logical development in a volume such as this. My hope is that the study of treatments of Ockham's supposition theory, which provides the opportunity to look in some detail at the history of modern efforts to understand a portion of medieval logic, will allow us to draw from

[3] Spade 2000.

this history a few lessons about the methodology and historiography of medieval logic more broadly.

In the second part, I would like to propose (based on articles contained in this volume and elsewhere) a typology of methodological approaches to the study of medieval logic. The four types are:

1. Rational reconstruction,
2. Historical reconstruction,
3. History of applied logic, and
4. Social history.

Each of these types will be outlined in section 2 below. This typology is not, in all likelihood, exhaustive. Each of the types proposed probably admits of further, qualifying distinctions and subdivisions. But it is a start to the project of trying, in the face of some confusion about what medieval logicians thought they were doing, to try to sort out what *we* think *we* are doing as we figure that out.

1. A History of Interpretation

This is a brief sketch of the modern history of the interpretation of one aspect of a medieval philosopher's doctrine of supposition. This sketch is not intended to adjudicate the efforts or ascertain the merits of any one interpretation over another. Moreover, it does not recapture every contribution to the debate, nor every logical nuance involved in the discussion. Rather, it is meant to illustrate the often difficult interaction between contemporary strategies of interpretation and the goal – which presumably ought to govern, at least in part if not more, an analysis of an older philosophical position – of getting the interpretation right. The recent history of interpreting Ockham's supposition doctrine, and especially the challenges posed by understanding what he meant to do with the 'modes of personal supposition', is especially interesting. Here we are interested in the use of analytic theories (modern quantificational theory) and techniques (formalizations) for the interpretation of Ockham's doctrine. As such, this history is an example of the use of one of the types of approaches to the study of medieval logic, namely, Rational Reconstruction. The aim of this brief history of interpretation is to tease out, where possible, historiographical and methodological lessons that can be extended to the rest of the study of medieval logic.

In 1952, P. Boehner made the following suggestion:

> Since supposition is principally, though not exclusively, concerned with the quantity of terms, it deals for the most part with the extension or range of predicates in reference to individuals. On this point the theory of supposition is, to a very large extent, one with the modern theory of quantification.… Though we are convinced that the theory of supposition at root is comparable to the modern theory of quantification or with the functional calculus of the first order, actual comparison is made difficult in view of the fact that modern logic uses an artificial language, whereas the scholastics applied their analysis to a 'natural' and a spoken language.… Medieval logicians…busied themselves with ascertaining the meaning and function of those syncategoremata which regulate the range of predication for categorematic terms.[4]

This suggestion was also made by E.A. Moody:

> In saying that a term has supposition relatively to another term, *for* some thing or things, the medieval logicians were expressing an analysis of propositions of subject-predicate form similar to that which is now effected through the use of quantified variables – e.g., '(x). Fx ⊃ Gx' or '(Ex) : Fx . Gx.' The word 'thing' as used in this definition of supposition functions as a pronominal identification of the terms for a common value in their extensional domain.[5]

Due to Boehner's interest in the supposition theory of William of Ockham, historians of medieval logic spent a great deal of time looking specifically at his system in light of the supposition-as-quantification thesis. As is well known, Ockham does not provide a full account, or a definition, of supposition:

> Supposition is a property of a term, but only when it is in a proposition.… Supposition is said to be a sort of taking the place of another.… [I]f the suppositing term is a subject, it supposits for the thing of which (or of the pronoun referring to which) it is asserted by the containing proposition that the predicate is to be predicated. If, however, the suppositing term is a predicate, it supposits for the thing (or the thing named by the name) with respect to which the subject is asserted to be the subject.[6]

---

[4] Boehner 1952, 28–9.

[5] Moody 1953, 22.

[6] Ockham *SL* I, 63. In what follows, I will not provide an exposition of Ockham's theory, nor of supposition theory more generally. But there are many general introductions to be found (most recently Ashworth 2010).

For Ockham, both the subject term and the predicate term supposit in a categorical proposition. Ockham recognized three types of supposition: material, simple, and personal. 'Any term, in any proposition in which it is placed, can have personal supposition' (I, 69), although a logician can limit its supposition to either material or simple. According to Ockham, 'a term supposits personally when it supposits for the thing it signifies and does so significatively' (I, 65). Discrete personal supposition determines the kind of supposition of a discrete term (e.g., 'William', 'this man'). Common personal supposition divides into three modes, distinguished syntactically, each of which affords the opportunity to determine what the supposits for the terms are in accordance with logical 'ascents' and 'descents' to and from the singulars: for example, from

Every man is an animal

we can descend to the singulars regarding the subject:

This man is an animal and that man is an animal and…

Ockham sets out the various rules that govern the application (to the subject, to the predicate) of the various modes of common personal supposition for each type of categorical proposition.[7] These modes of personal supposition had attracted the attention of modern historians of logic since it looked as if 'suppositional descent is an elimination of quantification by expansion'.[8]

Boehner's and Moody's suggestions that medieval supposition theory is 'at root comparable to the modern theory of quantification' and 'one with the modern theory of quantification' are intriguing, but what, precisely, do they mean? Are supposition theory and modern quantificational analysis both engaged in the same *type* of logical analysis of propositions? Or is supposition a *proto*-quantificational theory? Are supposition theory and modern quantificational analysis used for the same *purpose*? These are difficult philosophical questions, but there are other methodological questions that are raised by Boehner's and Moody's suggestions. For example, can supposition theory be construed using the *techniques* of modern analysis (e.g., modern standard

[7] For a comparison of Ockham's division and application of the modes of personal supposition with those of other logicians (William of Sherwood, Peter of Spain), see for example Swiniarski 1970.

[8] Matthews 1964, 95.

logic), supplementing it (or even reconstructing it) where needed to compensate for its fledgling state? What have we accomplished if we can do so, and what do we learn if we fail? Answers to *all* these questions turn out to be difficult to find. The suggestions from Boehner and Moody must be read, at the very least, as a hypothesis to be tested: what happens *if* we interpret Ockham's doctrine along modern lines? Scholars endeavoured to do just that.

The first challenge to the supposition-as-quantification thesis was raised by G. Matthews in 1964. Matthews pointed out a major difference between the doctrines: 'Ockham quantifies over terms whereas modern logicians quantify over variables,' and, as a result, 'Ockham and the moderns are not free to agree on the interpretation of any categorical propositions – whether A, E, I or O'.[9] Matthews' challenge, which nonetheless retains the thesis that supposition is a *kind* of quantification, carried a significant implication: that modern quantificational logic could not be employed to interpret Ockham's logic. In an immediate response, D.P. Henry (1964) dismissed as 'idiosyncratic' and 'nonsense' the suggestion that a modern logical system could not be used to make sense of supposition theory. He proposed, instead, the use of a different logical theory:

> I shall now demonstrate the narrowness of the view presupposed by showing the perfectly straightforward analyses of [four problematic propositions critically discussed by Matthews 1964] which are furnished by the Ontology of S. Leśniewski, and which do full justice to Ockham's position.[10]

Henry's suggestion raises the possibility that the problem is not one of the incommensurability of medieval and modern logics, but of finding

---

[9] Matthews 1964, 99. Matthews' reason is this (1964, 95–6): 'In Ockham's theory it is the *subject and predicate terms that are considered to be quantified*. So 'Some man…' is expanded into the disjunction 'Man$_1$…or man$_2$…or…' and 'All men…' is expanded into the conjunction 'Man$_1$…and man$_2$…and…'. In modern mathematical logic it is *variables that are quantified*. To eliminate a quantification by expansion we should have to go from '$(\exists x)\varphi x$' to the disjunction '$\varphi x_1 \vee \varphi x_2 \vee \ldots$' and from '$(x)\varphi x$' to the conjunction '$\varphi x_1 \cdot \varphi x_2 \cdot \ldots$'. So one reason there can be no faithful rendering of suppositional descent in modern mathematical logic is this: since it is variables that are quantified in modern logic, any descent to singulars achieved by the elimination of quantifiers would have to be a descent to all *x*'s, that is, to all the individuals within the universe of discourse. Regardless of whether a proposition is universal or particular, there could be no descent by elimination of quantifiers to, say, men and nothing else, as there is in supposition theory.'

[10] Henry 1964, 291.

the appropriate or more suitable modern logical system to perform the analysis.

I will not (and could not) outline the details of Henry's proposal. As far as I know, it has not been picked up and developed by anyone else. I note only that it was rebuffed by J. Trentman in 1966, and that Trentman's reasons for rejecting the applicability of Ontology for the study of Ockham's supposition theory were enlightening beyond their task. Like Henry, Trentman did not dispute the applicability of modern formal theories to medieval logic. Instead, he raised the question of the relationship between a logic and its interpretation:

> A logic differs from an uninterpreted calculus in that, at least according to many logical theorists (including the medieval logicians under discussion), a logic is always developed with a view to an interpretation. It must be developed with a view to expressing what can be truly said about the world, and these fourteenth-century logicians thought this means that some basic features of the structure of the world must be reflected in the syntax of the logical system. This is why differences in logical theory in the fourteenth-century so often reflected differences in metaphysics or philosophy of nature and why Ferrer, for example, begins his logical treatise on supposition theory with a review of opinions about universals.... Logicians like Burleigh and Ferrer rejected Ockham's doctrine of predication and would doubtless reject its twentieth-century expression in the system of Leśniewski's Ontology, preferring a system like Frege's Begriffsschrift, on the grounds that the representation of predication in a Thomist or Fregean system properly reflects the relation of inherence of a form in the matter of which it is the form in that about which the proposition speaks in a way in which its representation in Ockham's or Leśniewski's system would not. The dispute has to do, then, not with logic itself, but with the form of the world as it is reflected in the interpretation of a logical system.[11]

Trentman's point is that different logics contain a preferred interpretation or range of interpretations, which are not neutral with respect to various metaphysical commitments.

In 1970, J. Swiniarski published an outline of Ockham's theory of supposition, again arguing that it can be interpreted as a theory of quantification along modern lines. In this, he paid careful attention to the modes of personal supposition and distilled from Ockham's text the rules that determine, for each form of proposition, the attribution of those modes either to subjects or to predicates. But another

[11] Trentman 1966, 362.

challenge was looming. As mentioned already, Ockham's strategy of descending to singulars was what scholars took to be part of his rudimentary or primitive quantificational theory. This is true only if, of course, the conjunctive or disjunctive propositions to which we can descend are logically equivalent to their original. But there is a problem in the case of the analysis of negative particular propositions. If we begin with, say,

Some man is not an animal.

and we descend on the predicate to,

Some man is not this animal and some man is not that animal and…

it is obvious that the expanded proposition is not equivalent to its original. In 1973, Matthews pointed out the basis for this second challenge, namely, that the problem is one of the scope of the quantifier.[12] However, not only does Ockham nowhere argue for, nor claim equivalence, Matthews noted, but the non-equivalence in Ockham's own account between *O* propositions and their predicate expansions is patent. According to Matthews,

> The result is that we face a hermeneutical dilemma. The principle, *make the history of philosophy as interesting as you can*, leads us to say that, although Ockham never claims equivalence for the expansions that result from descent, he probably thought of them as equivalent to the propositions from which they are derived. That way we can find in the doctrine of descent schemata for the contextual definition of quantifiers.… But the principle, *don't multiply howlers beyond necessity*, leads us to deny that Ockham thought of the expansions as equivalent to their originals, lest we attribute to Ockham the howler of thinking the predicate-term expansion of an O proposition like [Some man is not this animal and some man is not that animal and…] equivalent to its original, in this case, [Some man is not an animal].[13]

[12] So, while expansion of the subject term in the above example leads to unproblematic inferential equivalence (This man is not an animal, or that man is not an animal, etc.), the inference fails when we reascend to the original proposition after expansion of the predicate term. This point had also been raised by Geach 1962, to which Swiniarski 1970, 210 replied by supplying, on Ockham's behalf, a priority of analysis rule, namely, 'that the subject must be analyzed before we perform an analysis of the predicate'.

[13] Matthews 1973, 20.

This second challenge to the supposition-as-quantification thesis provoked a flurry of scholarly responses. In one response, Spade (1976) decided to push the interpretive envelope and 'make the history of philosophy as interesting as you can': we must impose onto Ockham a view that he never himself espouses, but one which he *must have* intended, namely, that there is equivalence between an undescended proposition and its descents. And, Spade notes, there is a lot at stake if we accept Matthews' challenge:

> While Matthews is certainly right in saying that Ockham never claims equivalence explicitly, I for one find it hard to imagine that he means anything else. For if equivalence fails, the elaborate distinction of the various kinds of personal supposition cannot be used in an account of truth-conditions. What then is the distinction for? Is it simply an idle decoration in the theory of supposition?[14]

Without attributing this view to Ockham, Spade urges, we are at an impasse. Either we violate Ockham's explicit doctrine and divine what he must have intended or we give up the idea that we understand what he is trying to accomplish with the modes of personal supposition and the analysis of propositions and their descents.[15]

The question whether supposition is quantification is rendered doubly tricky to answer: to discover whether supposition is a kind of quantificational analysis seems to require that we use modern quantification theory itself as the means by which we try to understand supposition theory. But when the application of modern logic fails, what conclusions are we to draw? That Ockham made a mistake, one rectifiable by our explication of his intentions? Or that Ockham's doctrine of supposition is not, after all, intended to be a theory of quantification, but something else? At this stage in this brief history of logical interpretation, the impasse described by Spade forces on us the need for methodological reflection, possibly the adoption of certain principles that can guide and limit the extent to which a logic of the past can be made sense of in modern terms. One such principle might be this, from Q. Skinner: 'No agent can eventually be said to have meant or done something which he could never be brought to accept as a correct description of what he had meant or done'.[16] But would

[14] Spade 1976, 265.
[15] Spade 1976, 270.
[16] Skinner 1969, 28 quoted in Rorty 1984.

Ockham accept Spade's description of what he thinks Ockham must have meant? Moreover, Skinner's principle is ambiguous: are we to describe what Ockham must have meant in our, modern terms or in Ockham's own? We will return to some of these questions in section 2 below.

One serious effort was subsequently made to save both the thesis that supposition is quantification and the possibility of formalizing Ockham's logic using modern standard logic. In a quick, four-and-a-half page article published in 1977 in *Mind*, G. Priest and S. Read advanced a new solution to the question of the relationship between Ockham's logic and modern theory:

> The purpose of this paper is to establish that, contrary to the claims of many people [citing Matthews 1964], the medieval theory of personal supposition can be formalized in modern standard logic. (There is, however, one important proviso.) We shall use this formalization (a) to establish that Ockham was mistaken in his analysis of the *suppositio* of the predicate in the O form, and to put him right; and (b) to correct the following claims that have recently been made about the theory: (i) that Ockham and the medieval logicians in general omitted some modes of *suppositio*; (ii) that Ockham lists too many modes; and (iii) that the theory is incapable of dealing with multiple quantification (i.e., the theory of relations).[17]

In a detailed response, however, J. Corcoran and J. Swiniarski (1978) delicately argue that, while the Priest-Read formalization affords an important 'clarity and precision', it is 'not a formalization of *Ockham's* theory and . . . it is not a formalization of the Loux exposition [on which it purported to be based] either'.[18] The Priest-Read formalization is also criticized for its cost, namely, it is historically implausible.[19]

Just when it was beginning to look as if the supposition-as-quantification thesis – at least for the modes of personal supposition – would have to be abandoned,[20] E. Karger advanced a new interpretation

---

[17] Priest and Read 1977, 109.

[18] Corcoran and Swiniarski 1978, 163.

[19] Spade 1997, 206. The Priest-Read interpretation depends on attributing to Ockham an aim which was only later developed (by the time of Albert of Saxony). However, as Spade notes, 'Without some account of what those earlier authors were doing, it is impossible to understand why early fourteenth-century authors should have decided to do it differently. They were certainly not teleologically influenced by the future of the theory.'

[20] See Matthews 1984.

altogether. Echoing suggestions from A. Freddoso and C. Normore,[21] Karger argued that what Ockham intends by the modes of personal supposition is a theory of *inference*, not a theory of quantification. Karger's analysis is based on a reconstruction of Ockham's theory, and like any reconstruction needs to be evaluated for its correctness *if* our goal is to get it right about what Ockham was doing. Briefly, Karger contends, the theory lays out a system of rules for determining the validity of inferences for categorical sentences that cannot be made to conform to the standard categorical forms.

Whether Karger's interpretation is correct, or not, is not for us to decide here.[22] What I want to emphasize instead is the means by which she was able to shift theoretical gears, specifically, by asking two 'unduly neglected questions': '(a) what is the purpose of TM [the theory of the modes of personal supposition]? and (b) is the contribution which TM makes to Ockham's Logic an important and useful one?'[23] Her theoretical advance was made possible as a result of asking a rather simple methodological question: what was the purpose of the doctrine *according to Ockham*? Given that we cannot ask him his intentions, to answer this question requires that we examine the work it does *for Ockham's own system of logic*.

After Karger's suggestion, scholars responded in two very different ways. The first, taken by Spade, is to agree that there is not one but

---

[21] See Freddoso 1980, 28. The view is reported to have been suggested by Normore by Matthews 1984, 84.

[22] See Markosian 1988. Markosian argues that Karger's strategy fails. In light of this failure and, it seems the supposed failure of the supposition-as-quantification thesis, Markosian (1988, 52) espouses quietism: 'I cannot help feeling that it has been a mistake all along to try to fit TM [the theory of the modes of personal supposition] into some category (or other) of philosophy of language with which we in this century are already quite familiar and, hence, comfortable. I think it is likely that, far from being either a theory of quantification or a part of a theory of inference, TM is simply an account of certain linguistic phenomena that medieval philosophers took to be primitive. Supposition in general, and TM in particular, are not to be analyzed in terms of some further notions, nor is the medieval writer's interest in them to be accounted for in terms of some other project. To understand what Ockham and other medieval writers were up to in discussing these concepts, we must, like them, begin by taking the concepts in question to be real features of language (in something like the spirit which contemporary writers view the notions of sense and reference) whose investigation is interesting in its own right.' This might be fine if we want nothing more than a doxographical survey of medieval logic, but it will not be adequate for engaging in any historical study that seeks to examine medieval doctrines in a *broader*, comparative philosophical context, where some translation between theories is required.

[23] Karger 1984, 88.

two very different theories: generally, supposition is a theory of reference, answering the question 'What thing or things are referred to by a given term-occurrence in a given sentence?', but the doctrine of the modes of supposition, specifically, 'rests on an account of the inferential relations between a sentence and its singulars with respect to a given term-occurrence'.[24] Spade's effort is an extension of the desire to preserve the strict supposition-as-quantification thesis and explain away the portions of that theory that fail to fit the thesis as a whole, even if at great expense to the integrity of a given philosopher's doctrine and our estimation of his intentions.[25]

The second way of responding, taken by C. Dutilh Novaes (2005, 2007), is to reconceptualize the entire enterprise, that is, to reconsider *just how strictly* we are to take the supposition-as-quantification thesis. While Dutilh Novaes concedes that something *like* quantificational analysis was attempted (and describes supposition in terms of 'quantification', in scare quotes), in fact the medieval project had, she argues, a different aim. A theory of quantification is employed in order to ascertain the truth conditions of categorical propositions in their various forms. But if supposition aims to ascertain truth conditions, then we are presupposing that supposition is functioning as a theory of reference in the modern sense of how the term is used, i.e., as 'picking out the referents of the terms'. This assumption has been made by most leading scholars at least since P. Geach in *Reference and Generality* in 1952. Dutilh Novaes questions it. Not only, Dutilh Novaes points out, are modern philosophers without agreement about the theory of reference itself (i.e., 'reference' is theoretically non-univocal), and so glossing 'supposition' in terms of 'reference' is ambiguous at best, but the situation is worse: supposition theory, she alleges, is not concerned to achieve what modern philosophers of logic and language are trying to do with reference. Supposition is not, she argues, reference, but

[24] Spade 1988, 190 and 192.

[25] Most recently, Spade's (1988, 212) view is this: 'By the early fourteenth-century, the doctrine of modes as a theory of reference had been pretty much defeated. But once this had happened, the theory of modes of supposition was left with no *question to answer*. It was no longer a theory of reference; it was not, I have argued, a theory of truth conditions or analysis. The theory was left with no task to perform. No wonder it has proved so hard for scholars to agree about what it was trying to accomplish. By the early fourteenth-century, it was no longer trying to accomplish anything at all!' For a rebuttal of Spade's proposal, see Matthews 1997.

something more akin to what is meant by 'meaning' (when modern philosophers distinguish between 'reference' and 'meaning').

Two valuable methodological lessons ought to be drawn from Dutilh Novaes' work, as she herself urges. First, contemporary logic and philosophy of language bring with them a whole host of theoretical commitments, many of which are currently in dispute. None can be applied to history without thorough investigation of their use in contemporary philosophy. It is not as if this general methodological point has gone unnoticed before, but Dutilh Novaes reminds us how carefully we ought to be using even the rather common vocabularies available to us via the tools of modern logic and the philosophy of language.

Second, like Karger who asked the previously unasked question about the place of one of Ockham's doctrines within his logical system more broadly (and thus the purpose to which he thought it could be put), Dutilh Novaes asks why would medieval philosophers have wanted or needed a doctrine of supposition at all. Of course, this question had been asked regarding the *origins* of supposition theory in the twelfth century by L.M. De Rijk. He proposed that the doctrine emerged out of interest in the theory of fallacies.[26] But Dutilh Novaes raises the question *extra-logically*, that is, by asking what needs would be served by it as a tool, since logic was a tool for the study of extra-logical subjects in the middle ages. Without delving into much historical detail, Dutilh Novaes observes the well-known fact that medieval philosophers were everywhere engaged in the practice of *commentary*:

> I argue that the nature of this activity gives us clues to understand supposition theory in general, insofar as it all seems to indicate that these theories were developed, among other things, in order to respond to intellectual needs related to the performance of textual commentary.

At this point this is only a hypothesis, but Dutilh Novaes provides compelling evidence from the mouths of medieval practitioners to support her theory.[27] This extra-logical consideration provides a means by which supposition theory can be recharacterized as a theory of hermeneutics, specifically that Ockham's supposition theory 'is best

[26] This thesis has been recently reexamined: see the forthcoming proceedings from the 17th European Symposium for Medieval Logic and Semantics (XVII ESMLS, 2008): 'Rise and Development of Supposition Theory', Leiden.

[27] But see McCord Adams 1976, 384–5.

viewed as a theory of algorithmic hermeneutics'.[28] (According to this theory, supposition theory provides a mechanism to generate possible readings of a proposition. It is the task of the interpreter to decide from among the range of readings which might have been the author's (or speaker's) intended meaning.)

Let us quickly summarize this little history of interpretation. After the idea was first proposed by Boehner and Moody that Ockham's doctrine of supposition, and supposition theory more generally, is meant as a theory akin to the modern theory of quantification, at least two major objections were raised and debated. The first was that quantification is made over terms in Ockham's logic, not over variables, and so the very question of formalizing supposition theory along the lines of, and with the use of, modern quantificational logic was put into jeopardy. Second, it was noted that there is a lack of equivalence between some descended propositions and their originals in some of the modes of personal supposition. But if supposition theory as a whole is meant as a theory of quantification that endeavours to determine the truth conditions of propositions, and this portion of supposition theory fails to do so, is supposition theory as a whole really meant to *be* a theory of quantification? It was noted, additionally, that there is no evidence in Ockham that equivalence was intended, although this question was subsequently debated by medieval logicians. Since some post-Ockham logical theorists recognized the need for equivalence, it was suggested that it might be possible to retroactively read this intention into Ockham's theory. However, the historical implausibility of this suggestion (not to mention the damage this would do to Ockham's reputation as an excellent logician) seemed sufficient to rule it out. Another solution was offered: that in Ockham's logic, the modes of personal supposition have a different function than quantification, namely, to handle the exceptional cases of propositions which cannot be made to fit into standard A, O, E, I forms, and to serve as a theory of inference. This solution permits us to say that Ockham recognized an important problem in the use of supposition theory in Aristotelian logic, even if his solution was not perfectly successful.[29] Since the modes of personal supposition and the doctrine of ascent and descent were to have a

[28] Dutilh Novaes 2005, 84.
[29] See Karger 1984.

different aim from the aims of supposition theory, they are thus different theories altogether. (Again, however, it was pointed out that there is no evidence in Ockham's texts that he was using 'supposition' to mean two different things, or to achieve two different logical outcomes).[30] Finally, the strictness of the quantificational comparison was questioned for Ockham's supposition theory as a whole: perhaps Ockham is not trying to construct a system of quantificational analysis in our sense, but rather an algorithmic hermeneutics, providing a mechanism by which to generate possible readings of propositions from among which interpreters can choose the one they think best fits. If nothing else is clear at this stage, it is most certain that the debate over Ockham's theory of supposition and the modes of personal supposition will continue.

2. A Typology of Approaches to the History of Medieval Logic

The history of efforts to use modern logical theories and techniques in order to interpret this one aspect of Ockham's logic is fascinating, and from this case study we have learned a lot. But what is striking is that this intense period of interpretation was dominated by one method of interpretation – namely, the method of rational reconstruction – and it was *almost totally uninformed by other historical methods of understanding medieval logic*. Because interpreters were determined to make Ockham speak in our language and on our terms, they encountered a number of interpretive dilemmas. Perhaps, the most difficult of these was that rational reconstructions of Ockham's logic seemed to show that Ockham was not a very astute logician (or at least, that he did not understand the nature of quantification). But if interpreters were to look outside the immediate confines of Ockham's exposition of supposition theory, if they examined the history of supposition theory as it was developed prior to Ockham, if they asked how Ockham's theory of supposition might have fit into his overall conception of logic and how it might have been used as a tool by Ockham in other domains, they might find that there are new and illuminating ways to understand what Ockham was doing when he expounded supposition

[30] See Matthews 1997.

theory. I am not suggesting that there is no place for Rational Reconstruction. Indeed, below, I will argue that Rational Reconstruction is an important part of the overall attempt to understand Ockham, or any historical figure or thesis. But Rational Reconstruction, by itself, cannot provide us with an adequate understanding of the history of philosophy. By contextualizing, either a portion of Ockham's logic into the context of his logic as a whole (as Karger did), or Ockham's theory as a whole within the context of medieval philosophical and theological projects (as Dutilh Novaes has proposed), it becomes easier to see how other types of historical approaches to the study of medieval logic *can* be used in a complementary fashion. For example, as Dutilh Novaes notes, there has been very little examination of the application to which supposition theory was put in non-logical contexts.[31] Progress in our understanding of what Ockham was doing is possible only if we now turn to other types of historical inquiry. In particular, if Dutilh Novaes is right, we should turn to what I call a History of Applied Logic to see if we can see if the suggestion that supposition theory is an hermeneutical algorithmics (or whatever else) is right. Dutilh Novaes' suggestion invites an alternative approach to the history of medieval logic to work conjunctively with her own.[32]

I have already mentioned that there are four historiographical typologies that have been recently used by scholars: (1) Rational Reconstruction, (2) Historical Reconstruction, (3) the History of Applied Logic, and (4) Social History. Much of what we observed in section 1 falls under the first of these typologies. Given that there is a need to round out our understanding with other historical methods, it is time to examine precisely what Rational Reconstruction does, and to contrast it with the other three methods.

The first two methods, Rational Reconstruction and Historical Reconstruction, are most common.[33] The latter two, History of Applied

---

[31] See for example Brown 1993, Valente 2007.

[32] Dutilh Novaes' work also demands that we reconsider what we are importing from our own logical theories when we engage in formalizing a logic of the past. On the basis of this history of interpretation, and as Dutilh Novaes argues in her recent work, we can recognize that formalization in terms of modern standard logic is just one type of formalization, one which is not adequate to interpret Ockham's supposition theory. I would like to thank Dutilh Novaes for personal correspondence about this issue.

[33] The framework for the typology of Rational and Historical Reconstruction is based on R. Rorty 1984. Although Rorty's philosophical writings were heavily criticized by historians of philosophy for their a-historical, non-contextual character (espe-

Logic and Social history, are rarely undertaken, but this is not because they lack value or importance. I think the reason is, simply, that they are very hard to do. The purpose of this typology is to make explicit the aims expressed by historians of medieval logic who are working in otherwise apparently different fashions, and paying attention to different details, but who, in the end, must rely on one another to achieve a common goal: to understand the theories, practices and goals of medieval logic. Each of the four typologies is distinguished along two dimensions. First, they are distinguished according to their respective goals. Second, they are distinguished according to the various contexts within which the history of logic is examined.

2.1 *Rational Reconstruction*

What are the aims of the Rational Reconstructionist? He or she tries to make historical figures 'one of us' by engaging in a 'conversation with the re-educated dead'.[34] In the case study sketched above, we can see the efforts to present an Ockham who has been re-educated by the developments and goals of modern logical theory. Although anachronism is unavoidable for those using this approach to historical material,[35] it is not necessarily pernicious as a contribution to the history of logic if it is done self-consciously and explicitly. For example, consider the recent study of fourteenth century nominalistic logics by G. Klima:

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

---

cially when discussing the history of philosophy itself), his historiographical essay is a helpful guide. Rorty's four genres of history of philosophy also include 'intellectual history' and 'Geistesgeschichte', that is, canon-forming histories. No doubt there have been efforts at canon-formation in logic (consider the commonplace that there are two and only two great figures in the history of logic, Aristotle and Frege, for example). Certainly Kneale and Kneale (1962) provide a relatively recent example. I am proposing a reinterpretation of Rorty's 'intellectual history' genre, and I am not considering 'Geistesgeschichte' at all.

[34] Rorty 1984, 51 and 52.

[35] This point is noted also by Rorty 1984.

> Tarskian intuitions)?…[F]ollowing *their* intuitive clues, *we* may still provide such definitions that could constitute what *we* would recognize as a full-fledged semantic theory for a certain class of expressions, culminating in a definition of logical validity.[36]

By trying to think about medieval logic in our own terms, we hope to identify points of contact and divergence, thereby learning more about the history of logic as a whole (including what we are up to in our own contemporary projects, informed by comparative analyses). The context within which the Rational Reconstructionist examines the history of logic is our own, namely, from the perspective of our contemporary theories, terminology, and interests.

Formalizing medieval logic (as, for example, in our case study according to modern symbolic logic) is one type of Rational Reconstruction for investigating past logical theories. It might seem, on the basis of the quotation from Klima above, that formalization takes Rational Reconstruction too far, namely, to the extent that fidelity to the original philosophical material can be jettisoned or, at least, pushed far to the side. Some historians of philosophy might dismiss this approach as a fruitless engagement in symbolmania; others might not want to grant it the status of being a *history* of logic but, instead, perhaps some exercise in the *philosophy* of logic that ignores diachronic details. However, outright dismissal of formalizing techniques would be a mistake, just as would be dismissing Rational Reconstructions of all types. What is required is reflection on the aims of formalization as a method of reconstruction, and an effort to determine which principles we ought to adopt to guide the use of this method to retain fidelity to the original material. As P. Thom outlines in his contribution to this volume, the practice must be guided by certain aims and principles, including a fidelity to the original material and being contentfully illuminating (what Thom calls the 'treatment of the object'). He also advocates that practitioners of this approach adjudicate the integrity of the object of interpretation, aim at comprehensiveness and coherence, and recognize the need for and boundaries of creativity. Some historical contextualization is still required, at least as much as is needed to account for the anachronistic elements.

[36] Klima 2008, 391 ff.

However, sometimes a lot of hard philosophical work must be done just to see whether it is possible for a medieval philosopher to speak to us on our own terms, such as A. Arlig tries to determine in his investigation of medieval mereology in this volume. In his contribution, Arlig investigates whether or not medieval and contemporary philosophers have the same, underlying philosophical understanding of basic logical (and/or metaphysical) terminology, such as 'parthood'.

Re-education can take many shapes and forms, and given that there are always new things to teach dead philosophers, there is no limit to the number of lessons medieval philosophers can be made to hear. The Rational Reconstructions that are produced are in the end just one type of approach to the history of logic, and cannot do more *as histories* than they claim to achieve, namely, to find ways for the past to speak in our language, or to discover that they cannot. (That is not to say that they don't achieve a great deal else in other, philosophical or logical respects.)

2.2 *Historical Reconstruction*

The aim of an Historical Reconstruction is to present, as accurately as possible, the logical theories (and practices) of the past *on their own terms*. The logic of the past, of course, cannot simply be presented undisturbed, or without reconstruction of any sort. It might be best to consider what an Historical Reconstruction is by comparing it to a Rational one: whereas in a Rational Reconstruction we want the medieval philosopher to speak to us in *our* own language and with an acquaintance with our logical theories and problems, an Historical Reconstruction aims to allow the medieval philosopher to speak in *his* own language, from his own perspective in history.

A distinguishing feature of Historical Reconstruction is its close relationship to a broader *philosophical* context. While some single aspect or feature of some doctrine from the past might be picked out and rationally reconstructed without much contextual baggage, historical reconstructions are heavily weighed down by philosophical context. Historical reconstructions might consider the historical development of a theory or problem (e.g., the development of a supposition theory), a particular context of philosophical debate and controversy (e.g., the debate over the metaphysical implications of theories of simple supposition), or simply the philosophical views of a single thinker or school (e.g., Ockham, or Ockham and the Ockhamists). It might engage in

the careful, often highly tedious, examination of long-unread manuscripts authored by unfamiliar or unknown logicians, setting into meticulous context the details of logical theorizing of the past, and bringing these moments in the history of logic to a contemporary audience (although not necessarily in contemporary terms). Of course there are other subjects for historical reconstruction. The articles in this book that examine the methods of medieval logicians themselves, by S. Ebbesen, J. Ashworth, C. Erismann, A. Bertolacci and M. Di Giovanni, are examples of historical reconstruction which aim to identify and account for the methods employed by medieval logicians, and to investigate the relationship between medieval logic and philosophy (especially metaphysics) more generally.

The jobs of the Rational and Historical Reconstructionists are, and should be, complementary.[37] While the Historical Reconstructions keep the Rational ones historically grounded (or serve as a corrective when they are not), the Rational Reconstructions allow Historical ones to see, perhaps with a sharper precision, the relevant points of intersection and rupture between contemporary and historical concerns. The Historical Reconstructionist provides a crucial service to our efforts to understand logics of the past by insisting on fidelity to the original, philosophical material. A minimal flexibility with the methodologies employed by each, as well as a philosophical curiosity, are massively advantageous for the combined effort to understand the history of medieval logic.

These two types of approaches to the history of logic (and the history of philosophy more generally) are the most widely used, and there is much evidence of the profits of their interaction. Some work incorporates elements of both approaches, such as the article in this volume (and elsewhere) by C. Martin.

At the same time, there is reason to keep the approaches clearly distinct, at least theoretically, given their divergent goals. As S. Knuuttila suggests,

> In doing philosophical history of medieval logic, it is good to be aware of contemporary systematic discussions in philosophy, although it is not a good idea to employ contemporary theories as models in a systematic way.[38]

---

[37] Rorty 1984 also urged that his pairs of genres function together. My view is that all four are needed to work conjunctively, since the different aspects of medieval logic impose different demands to be met by the appropriate historiographical approaches.

[38] See Knuutila's chapter in this volume.

Knuuttila expresses skepticism that what he calls 'constructivist and formal' approaches to the history of medieval logic can provide insight into what medieval philosophers *actually* know. Recall Skinner's principle: 'No agent can eventually be said to have meant or done something which he could never be brought to accept as a correct description of what he had meant or done'. The ambiguity inherent in this suggestion must be resolved by means of the interaction between Rational and Historical Reconstructionists.

2.3 *History of Applied Logic*

Both the History of Applied Logic and Social History have been so rarely undertaken that it is difficult to describe them in much detail. They are linked approaches but, for the sake of laying out a typology of approaches to the study of medieval logic, I will keep them (perhaps artificially) distinguished in what follows.

This first is a history specifically of the ways in which logic was applied. Peripatetic logic is a propaeduetic logic; or, work in the Aristotelian logical tradition provides a tool for philosophy and theology in the middle ages. For a more comprehensive understanding of the history of medieval logic we need to examine how and where it was used. Logic was central to the medieval intellectual enterprise, and while not all aspects of medieval logic were applied, of course, many were. A study of the applications of logic to extra-logical work will help in many ways. It may assist us to recognize the motivations for particular theories and developments (e.g., the development of supposition theory in response to an interest in fallacies). It also provides a mechanism by which to test the various interpretive hypotheses arrived at by Rational or Historical Reconstruction (e.g., supposition theory as algorithmic hermeneutics). Consider, for example, S. Brown's recommendation for the study of supposition theory:

> [A]lthough modern students of medieval supposition theory have, for the most part, based themselves on medieval logical treatises, there is a rich parallel source for studying the development of the theory of the supposition of terms to be found in theological writings. For, especially in dealing with the Trinity and the Incarnation, theologians had to clarify their statements, explaining in each case whether they were speaking about the divine essence or about all or one of the divine persons, or whether they were speaking about Christ as God or Christ as man. Did they develop a certain consistency in their theory of reference or supposition? Did they find some logical principles that governed their use of language and could be applied to each proposition dealing with the Trinity? If they did, would such a theory also be applicable in

> statements concerning the Incarnate Son, where one is dealing with only one person, but a person with a divine and a human nature?[39]

This task, obviously, would be an enormous one, as Brown concedes:

> If we wanted to examine the success of such an endeavour, even in one author, it would require a complete search of all the propositions dealing with the Trinity or the Incarnation in that author's writings. We would have to see if there were explicit or implicit rules governing the referents in each of his statements. Then we would have to see if these rules could be applied in all the other areas of his theological or philosophical discourse in a consistent way.[40]

Despite the enormity of such a task, this work is needed, even if it will have to be parcelled out.

2.4 *Social History*

The second of these lesser used approaches is what I will call a 'Social History of Logic' (following J. Marenbon 2008). It might also be thought of as 'intellectual history', although that expression is often used (by historians of philosophy) pejoratively, especially since 'intellectual historians' are not necessarily philosophically-trained historians. What is a Social History of logic? Introduced by J. Marenbon in his recent article on early medieval logic in the *Handbook of the history of logic*,

> This aim [to explain the centrality of logic to a modern audience] calls for an approach rather different [from what is commonly undertaken]…What is most needed to illuminate the broadly human importance of the subject in this period (and in the twelfth to sixteenth centuries) is a *social* history of medieval logic, a type of study that has never until now been envisaged, let alone attempted.[41]

A Social History of logic seeks to explain the aims and uses of medieval logic by looking more broadly at its *social, cultural*, and *historical* contexts. It explores intellectual and practical cross-connections,

---

[39] Brown 1993, 123. According to Cristopher J. Martin 1997, 255: 'While such Studies of the logical textbooks are certainly important they remain, however, entirely speculative if they are not complemented by detailed investigations of the ways in which these devices were actually employed by medieval philosophers'. See also Valente 2007 for such a study of the application of logic in Parisian schools between 1150 and 1220, and Rosier-Catach 2004.

[40] Brown 1993, 123.

[41] Marenbon 2008, 2.

between logic and politics, logic and education, logic and theology, and so on.

A Social History of logic offers the opportunity – in response to Spade's original complaint, in the absence of declarations by medieval philosophers themselves – to provide us with insight about what *they* thought they were doing with logic, and to investigate the extra-logical reasons for its development and employment. The Social Historian urges us to look elsewhere than the logical or philosophical texts in which logic was applied for answers to that question. To do so presumes a deep familiarity with medieval logic itself in order to begin to know where to look in his or her investigations, but it also presumes an extensive familiarity with medieval history and culture more broadly. There are very few people with such training, but the need for work of this sort is great.

What can a Social History of philosophy provide beyond what is given by the other three approachs to the history of logic? As the case study above suggested, any Rational Reconstruction (or, indeed, Historical Reconstruction) needs to be tested and evaluated, and one way to do so is to examine the ways in which the logic was applied to determine whether the reconstruction makes good sense of the application of that logical theory. Not every part of logic was applied (note the scholastic distinction between *logica docens* and *logica utens*), but much of it was, and where possible the applications must be examined in light of reconstructive interpretations. A Social History of logic extends this study and provides explanations for the various motivations for the application of logic to other intellectual fields in the middle ages.

3. Conclusion

Historians of medieval philosophy interested in questions of methods used by medieval logicians and the methodologies by which we ought to study them are on the cutting edge of philosophical research. This might strike non-medievalists as a startling, implausible claim, especially since medieval researchers, often put in the dark of their own philosophy departments along with the figures they study, are not usually expected to push research forward. But I think this volume does just this. What we are doing as historians of philosophy today is not something that has a parallel anywhere in the history of philosophy

itself. Historians of philosophy are interested in history because it is intrinsically interesting *and* because it teaches us new things – both about the past and the present. We want to exploit the resources of the past without, at the same time, distorting or even destroying them. How to accomplish this goal requires reflection, debate, and theorization. Many researchers today are trained in both contemporary methods of philosophical analysis and the history of philosophy, and a volume such as this one exploits the resources that this training affords.

PART ONE

METHODS

THE 'ONTOLOGIZATION' OF LOGIC. METAPHYSICAL THEMES IN AVICENNA'S REWORKING OF THE *ORGANON*

Amos Bertolacci

The philosophical masterpiece of Avicenna (Ibn Sīnā, d. 1037), the *Kitāb al-Šifāʾ* (*Book of the Cure*), is an extensive *summa* with four main parts (logic, natural philosophy, mathematics, and metaphysics). The three first parts are further divided into distinct sections (nine sections of logic, eight of natural philosophy, and four of mathematics). The metaphysical part, despite consisting of a single section, includes at the end a succinct treatment of practical philosophy. One remarkable aspect of this massive work is the connection between the parts dealing with logic and natural philosophy, on the one hand, and the part devoted to metaphysics, on the other. Thus, some metaphysical doctrines are *announced* either in logic or in natural philosophy: Avicenna informs the reader that further developments of certain logical or physical issues will be found in metaphysics, since the scientific scope of logic and physics is limited. Conversely, many logical or physical doctrines are *quoted* in metaphysics: Avicenna summarizes these doctrines in order to use them in metaphysics, taking them as already sufficiently clarified in logic and physics.[1] A more peculiar – and, in my opinion, more interesting – type of 'interface' between logic and physics, on the one side, and metaphysics, on the other, is the case of logical or physical doctrines *repeated* in metaphysics: there are certain doctrines already developed in logic and physics which Avicenna expounds extensively in metaphysics for a second time. This third case

[1] See Bertolacci 2006, 279–284, 288–292, 572–580. The list of prospective references to metaphysics provided in this publication is not meant to be exhaustive: see Avicenna 1959 [henceforth: *Maqūlāt*] VII, 4 (265:16–18; 266:5–6; 268:13–14 where the reference to the 'discipline of philosophy' might in fact be a reference to the 'discipline of first philosophy'). Avicenna's retrospective references in metaphysics to logic and natural philosophy are either explicit ('As we said in logic', 'As we said in physics', for instance), or more veiled ('As you know'), or totally implicit (with no textual indication). The connection between mathematics and metaphysics appears, according to a preliminary investigation, less conspicuous.

is not completely distinct from the previous two, since it is occasionally accompanied by announcements (in logic or physics) of forthcoming metaphysical developments, and references (in metaphysics) to previous logical and physical treatments. What is peculiar to it is that one and the same doctrine re-occurs in two parallel passages.

The presence of these links can be explained in different, complementary, ways. First of all, the *Šifāʾ*, a collection of twenty-two independent but interrelated writings, is meant by its author as a single work. Thus cross-references – prospective in the case of logic and natural philosophy, retrospective in the case of metaphysics – are almost required by the extensiveness of the *summa* in which they occur. Moreover, in his reworking of the transmitted *corpus* of philosophical writings (an enlarged version of the Aristotelian *corpus*) in the *Šifāʾ*, Avicenna adopts a peculiar manner of exposition that allows the displacement of doctrinal material and the insertion of extensive digressions within his exegesis of the canonical texts on philosophy. Finally, Avicenna conceives of philosophy as a unified system, a sort of pyramid with metaphysics as its peak. Logic and natural philosophy are constitutively dependent on metaphysics, the queen of the sciences;[2] and yet the superiority of metaphysics over all the other branches of knowledge, attested by its task of laying the foundations of these latter, does not imply an absolute distinction. In Avicenna's perspective, nothing prevents metaphysics from taking certain doctrines from logic and natural philosophy, while at the same time providing the grounds of certainty for their principles.[3] In other words, the boundaries between metaphysics and the other philosophical disciplines of the *Šifāʾ* are fluid, on both structural, stylistic and epistemological grounds.

In the present article, I would like to focus in more detail on some of the *loci paralleli* between logic and metaphysics that are found in the *Šifāʾ*, classifying them into four main types: I) logical doctrines

[2] See Bertolacci 2006, 267–279, 284–288.

[3] In the reworking of the *Metaphysics* (Avicenna 1960a, 1960b [henceforth *Ilāhiyyāt*]) I, 3 (19:10–20:18) [Latin transl. in Avicenna 1977, 1980, 21:90–23:28], Avicenna argues that metaphysics is entitled to prove the principles of natural philosophy and mathematics and, at the same time, to assume some of the conclusions of these two disciplines. It can do so in so far as the conclusions it assumes do not derive, in natural philosophy and mathematics, from those principles of these two disciplines that metaphysics proves. In this passage of the *Ilāhiyyāt*, Avicenna applies this tenet only to the case of natural philosophy and mathematics. It seems, however, that this point can be extended also to logic.

repeated in metaphysics in order to be provided with an ultimate foundation there; II) doctrines dealt with *de facto* in logic, but *de iure* pertaining to metaphysics alone; III) doctrines autonomously investigated by both logic and metaphysics with minor changes; IV) doctrines autonomously investigated by both logic and metaphysics with substantial modifications. The logical texts I will discuss are taken from Avicenna's reworking of Porphyry's *Isagoge* (*Madḫal*),[4] and of Aristotle's *Categories* (*Maqūlāt*) and *Posterior Analytics* (*Burhān*).[5] These texts will be compared with their parallel occurrences in the reworking of the *Metaphysics* (*Ilāhiyyāt*). In the four parts of the present contribution, I will provide an example of each of these four typologies. The doctrines involved are the classification of universals, the distinction of substance from accident, the scientific status of metaphysics in comparison with dialectic and sophistic, and the predication of existence. Although the examples discussed here do not include all the parallels between logic with metaphysics in the *Šifāʾ*, they are representative of the main ways in which logic and metaphysics overlap in this work, and they suggest an important conclusion. On the one hand, the principles of logic, according to Avicenna, are epistemologically grounded in metaphysics (types I–II), but, on the other hand, logic is capable of dealing, independently from metaphysics, with crucial issues which metaphysics itself also treats (types III–IV). This sort of ambivalence (dependence and yet independence) of logic with regard to metaphysics in Avicenna's philosophy deserves special consideration if we wish to reach a clear view of how he conceived the relationship between the two disciplines.[6]

For Avicenna, metaphysics is, as such, an ontology, that is to say an investigation of being *qua* being, its species, properties and causes. Some of the parallel passages considered here also concern, in different ways and to different degrees, issues pertaining to ontology. Ontological considerations are, therefore, present in logic, either as a preliminary account of the more proper treatment to be found in metaphysics, or in their own right. In other words, the doctrinal overlaps between logic and metaphysics that I am going to discuss illustrate a tendency towards an 'ontologization' of logic, in which the domains of logic

[4] Avicenna 1952 (henceforth: *Madḫal*). Latin translation in Avicenna 1508.
[5] Avicenna 1956 (henceforth: *Burhān*).
[6] Insightful clues on the interaction between Avicenna's modal syllogistic and metaphysics are provided by Thom 2008.

and metaphysics are apparently conflated, despite Avicenna's clear-cut distinction of the philosophical disciplines. They therefore deserve to be more closely investigated.[7]

I

Madḫal I, 5 is the first proper chapter of Avicenna's reworking of Porphyry's *Isagoge*, after the general introduction to the *Šifāʾ* (I, 1), the initial classification of the sciences (I, 2), and the prolegomena to logic in its entirety (utility of logic, I, 3; its subject-matter, I, 4). At the beginning of this chapter, Avicenna divides 'utterances' (*alfāẓ*, sg. *lafẓ*) into simple and composite, contending that simple utterances must be investigated before composite ones. Then, in sections [a]–[d] of the reported text, he divides simple utterances into universal ([1]) and particular ([2]), further dividing the simple universal utterances into three types ([1.1–3]). The remaining two sections of the text determine how far universals are to be investigated in logic (section [e]) and point towards the further investigation of this topic provided by metaphysics and psychology (section [f]). Whereas sections [a]–[d] are the outcome of Avicenna's original arrangement of doctrines deriving from different authors (Aristotle, Alexander of Aphrodisias, Porphyry, Simplicius),[8] sections [e]–[f] echo Porphyry's statements in the Preface to the *Isagoge* (1, 9–15) more directly.

Text 1: *Madḫal* I, 5, (26:10–27:14) [Lat. Transl. in ed. Venice 1508, f. 3^{v}a–b]

[a] Then, either [1] the single notion signified by the simple utterance is not prevented in the mind, with respect to its conceptualization, from being equally shared in the same degree by a multiplicity [of things], in so far as each of them is said to be [this notion].

---

[7] The discussion of the relationship between logic and ontology has a long and lively history before Avicenna. For a brief overview and further bibliography, see Bertolacci 2006, 300–301.

[8] See Libera 1999, 509–515. Although the definition of the first type of universal in Texts 1–2 below can be compared to the one provided by Aristotle in *Metaph.* Z, 13, 1038b11–12, Avicenna's general account of universals in *Madḫal* I, 5 and *Ilāhiyyāt* V, 1–2 does not seem to rely in any significant way on the *Metaphysics*, as Avicenna's choice of the Sun as example of the third type of universal – against *Metaph.* Z, 15, 1040a34–b2, where the universality of the Sun is denied – witnesses (see Bertolacci 2006, 353).

[b] [1.1] An example is when we say: 'man'. For [this utterance] has a notion in the soul, and this notion corresponds to Zayd, ʿAmr and Ḫ̆ālid in a single way, since each of them is a man. [1.2–3] The utterance 'sphere containing [a solid] with twenty triangular faces', or better the utterance 'Sun', 'Moon', etc., all signify a notion whose conceptualization in the mind is not prevented from being shared by a multiplicity [of things], [1.2] even though, for instance, [this sharing] is not found (or: does not exist, *lam yūğad*) in actuality, like [in the case of] the aforementioned sphere, or [1.3] this [sharing] is prevented by a cause external to the concept of the utterance itself, like [in the case of] the Sun.

[c] Or [2] the notion of [the simple utterance] is such that the occurrence of multiplicity with regard to it is prevented, I mean with regard to [the notion] that is realized, single and intended, as when we say: 'Zayd'. For, even though the utterance 'Zayd' is shared by many [things], it is shared only with regard to what is heard. As to its single notion, on the contrary, it is impossible to posit one [utterance 'Zayd'] as shared, since [each] one of the notions [corresponding to the utterance 'Zayd'] is an ostensible essence, and the essence of this ostensible [thing] is prevented in the mind from being attributed to something else (unless one means by 'Zayd' not his essence, but one of his shared attributes). This case, even though does not prevent what is heard from being shared, prevents the single notion of the thing signified from being shared.

[d] The first case is called 'universal', the second 'particular'.

[e] You know that some utterances are in accordance with the [utterance of the] first case, and that some notions are in accordance with the notion of the first case, namely the notion whose concept in the soul is not prevented from being related to many things that correspond to it by means of a relation that is similar in all instances.

[f] But it is not incumbent upon you, in so far as you are a logician, [to explain] how this relation occurs; whether this notion, in so far as it is one shared [entity], has an existence (*wuğūd*) in those entities themselves that are regarded as sharing it, and, in general, an existence (*wuğūd*) that is separate and external, different from that which is in your mind; or how its realization (*ḥuṣūl*) in the mind occurs. For the investigation of such things belongs to one or two other disciplines (*li-ṣināʿa uḫrā aw li-ṣināʿatayni*).

We should notice in this text Avicenna's shift from the terminology of 'utterances' and 'predication', which he portrays elsewhere as typical of logic,[9] to the more peculiar terminology of 'notions' (*maʿānin*,

[9] From *Madḫal* I, 12, we learn that an universal is 'logical' (*manṭiqī*) when it is considered in the perspective of its predication of many less common things, i.e. in the perspective of its bare universality, regardless of the concrete nature to which this

sg. *maʿnan*) and 'sharing' (*ištirāk*) of – or 'correspondence' with (*muṭābaqa*), and 'relation' with (*nisba*) – one and the same notion by individual things (sections [a]–[c]). Thus, in the three-fold division of universals in section [b], three different types of 'sharing' replace and explain three distinct cases of predication: [1.1] the case in which an universal is predicated of many actual entities; [1.2] the case in which it is predicated of no actual entity (a case of non-denoting universality); [1.3] and the case in which it is predicated of only one actual entity.[10] Case [1.1] is the standard type of universal and is therefore substantially clear. Case [1.2] concerns a geometrical entity (the 'sphere containing a solid with twenty triangular faces') that, due to its complexity or peculiarity, is never *de facto* instantiated in reality (for example, in one or more drawings), despite being, as such, logically possible and therefore suitable for realization. The 'cause' (*sabab*) to which Avicenna alludes in the context of case [1.3] – where universality is assured on the logical level, but excluded by physical considerations – is probably the fact that all the matter of the species 'Sun' and 'Moon' is gathered in the two individuals Sun and Moon, thus excluding the existence of other individuals of these same species.

Sections [e]–[f] make clear that logic takes universality for granted, without investigating its cause(s), that is to say, without taking into account three fundamental issues: how the relation between the universal notions and their particular instances occurs; how the universal notions themselves exist (whether only in the mind, or also in external reality independently of the mind); how they exist – or are realized ('realization', *huṣūl*, being a synonym of existence) – in the mind. These issues are discussed by the two disciplines mentioned at the end, namely metaphysics and – in so far as the existence of the universal notion in the mind is concerned – psychology. Note how Avicenna takes care to avoid 'ontological' terminology in sections [a]–[e] (with the possible exception of the discussion of universal [1.2] in section [b]),

---

universality belongs: see the description of the 'logical genus' (*ǧins manṭiqī*), opposed to the 'physical' and 'mental' genus, in *Madḫal* I, 12 (66:12–13) [f. 12^{r}b]; English annotated translation in Marmura 1979 (reprinted Marmura 2005), 41–42.

[10] These three types of universals are called, respectively, 'in actuality' (*actu*) ([1.1]), 'in potentiality' (*potentia*) ([1.2]), and 'by nature' (*natura*), for example, by Albert the Great (see *Metaphysica, libri quinque priores*, V, 6, 5 (Albert the Great 1960, 285:16–38)).

in order to employ it in connection with the reference to metaphysics (and psychology) in section [f].

An analogous distinction of universals and particulars, and threefold classification of universals, occurs, with some small variations, at the beginning of *Ilāhiyyāt* V, 1. The passage in question represents the starting-point of the fifth treatise of the *Ilāhiyyāt*, and precedes the considerations regarding the mode of existence of universals, that Avicenna provides immediately afterwards in chapters V, 1–2.

Text 2: *Ilāhiyyāt* V, 1 (195:5–196:3) [Lat. transl. Avicenna 1977, 1980, 227:7–228: 24]

[a] We say that the universal ([1]) can be said in three ways. [1.1] A notion is said to be 'universal', in so far as it is said in actuality of many [individuals], like 'man'. [1.2] A notion is said to be 'universal' when it is admissible [for it] to be predicated of many [things], even though it is not required that these [things] exist (*mawǧūdūna*) in actuality, like the notion of 'heptagonal house'. This [notion] is universal, in as much as it is said by nature of many [things], but these many [things] are not necessarily existent (*mawǧūdīna*); rather, not even one of them [is necessarily existent]. [1.3] A notion is said to be 'universal' in the conceptualization of which there is nothing preventing [it] from being said of many [things]; only an [external] cause prevents it, if this happens, and a proof indicates it. Examples are the Sun and the Earth: for, in as much as they are intelligized as Sun and Earth, the mind is not prevented from regarding it as possible that their notion exists (*yūǧadu*) in many [things]; however, [the mind] is made aware of a proof or an argument, by means of which it knows that this is impossible. But this is impossible on account of an external cause, not on account of the conceptualization itself.

[b] All this can be summarized by [saying] that this universal is that the very conceptualization of which does not prevent [it] from being said of many [things].

[c] The universal employed in logic and its like must be this.

[d] The single particular ([2]), on the contrary, is that the very conceptualization of which prevents its notion from being said of many [things], like the essence of this ostensible Zayd. For [the essence of Zayd] cannot be imagined except as belonging to him alone.[11]

The account of universals and particulars in Text 1 and in Text 2 is substantially the same, with differences only with regard to minor

[11] The English translation of Text 2, as well as of Texts 4, 6 and 8, is mine. For a different English translation, see Avicenna 2005.

points, such as the extent of the discussion of the single cases,[12] the dividing-up of the tripartite classification of universals,[13] the choice of examples,[14] as well as other less relevant details.[15] But apart from these superficial differences, the doctrine of the two texts is basically identical, so that the texts can be regarded as parallel passages. In this light, the generic mention of logic in section [c] of Text 2 ('the universal employed in logic', *al-kullī al-mustaʿmal fī l-manṭiq*) might be taken as a veiled reference to Text 1.

But if the differences between these two texts are not so radical as to make Text 2 a new version of the classification, why then does Avicenna repeat the content of Text 1 in Text 2? For in Text 1 [f] he announces the metaphysical treatment of a topic related to the classification of universals, *not* of the classification itself. That is to say, this allusion to a future metaphysical discussion does not, by itself, necessitate the repetition of the same classification of universals in Text 2. The terminology of 'existence' employed frequently by Avicenna in section [a] of Text 2 provides a clue towards a possible answer. The solution to the problem probably lies in Avicenna's view of metaphysics as the discipline that provides the epistemological foundation of logic, as well as of all the other philosophical sciences. In accord with this view, Avicenna's strategy is to apply the distinction between essence and existence to the two fundamental doctrines of logic: the catego-

---

[12] Whereas in Text 1 the account of the particular (section [c]) is of the same length as the account of the universal (sections [a]–[b]), in Text 2 the former (section [d]) is shorter than the latter (sections [a]–[c]) and represents a sort of appendix to the text.

[13] Whereas in Text 1 the general definition of the universal comes before the classification of its different types (section [a]), in Text 2 it comes after (section [b]). Moreover, Text 2 distinguishes more precisely than Text 1 case [1.2] from case [1.3]. Although section [b] of Text 2 might be regarded as referring only to universal [1.3] in section [a], it constitutes more likely a common definition of all the three types of universals taken into account in the preceding section (see the opening sentence '*All this* can be summarized…'). This impression is corroborated by the parallelism with the following definition of the particular in section [c], and the analogous common definition of the universal in sections [a] and [e] of Text 1.

[14] Whereas the examples of cases [1.1] and [1.3] are substantially the same ('man' in both Text 1 and Text 2, 'Sun' and 'Moon' in Text 1, 'Sun' and 'Earth' in Text 2), the example of case [1.2] is different: the 'sphere containing [a solid] with twenty triangular faces' in Text 1 is replaced by the 'heptagonal house' in Text 2. The mathematical, rather than artificial, nature of the example of universal [1.2] in Text 1 might have some significance for Avicenna's theory of fictional beings (on this topic see Black 1997).

[15] The 'proof' (*dalīl*, lit.: 'sign') that Avicenna associates to the 'cause' within the discussion of universal [1.3] in Text 2 (absent in Text 1) possibly designates an inductive procedure or a demonstration *quia*. See Bertolacci 2007, 76 and n. 33.

ries, which Avicenna regards as the principles of the subject-matter of logic, and universals, which he takes as the very subject-matter of this discipline. In short, Avicenna takes logic as elucidating the essence of categories and universals, and metaphysics as investigating their existence, thus providing their ultimate explanation. As an instance of this strategy, in the present case he first summarizes the classification of the different types of universals from logic, and the definition of 'universal' and 'particular' (our Text 2), in order to give a preliminary idea of the essence of the universal before the properly metaphysical consideration of its existence. This possibly explains why in this text Avicenna insists on the universal rather than the particular, and places the definition of the universal after the distinction of its different types as the crucial point of the classification. The metaphysical account of universals, which starts immediately after Text 2, consists in the investigation of the existential conditions by means of which universality attaches to a certain nature. Thus, in the rest of chapter V, 1 and in chapter V, 2, Avicenna – wearing the metaphysician's hat – takes into account the 'modality of existence' (*kayfiyyat wuǧūd*) of universals, and shows that universality pertains to the natures of things only when these latter exist in the mind, in accordance with the task assigned to metaphysics in Text 1 [f]. Thus, the repetition in Text 2 of the doctrine of Text 1 is a propaedeutic step towards giving the metaphysical foundation to the logical doctrine of universals that Avicenna goes on to provide in *Ilāhiyyāt* V.

II

Avicenna devotes an entire chapter of the *Maqūlāt* (I, 6) to refuting the doctrine of those who hold that a single thing can be both an accident and a substance from different points of view. At the beginning of this chapter, he reports three distinct cases of this doctrine, with regard to the substantial form (45:11–16), the *differentia* of substance (45:16–46:1) and the accident of a compound (46:4–7). The third case is formulated as follows:

Text 3: *Maqūlāt* I, 6 (46:4–7)

[a] Also whiteness is part of the white [thing], since the white [thing] is an aggregate of substance and whiteness. Whiteness therefore exists (*mawǧūd*) in the white [thing], which is a substance, as a part, and is not [found] in it in the same way as an accident exists (*wuǧūd*) in something. It is therefore a substance in [the white thing]. In itself

and in its subject, on the contrary, it is an accident, since it is not [found] in it as a part, etc.

[b] A sect [of thinkers] therefore was befuddled and believed that a single thing is [both] substance and accident.

The 'sect' of philosophers mentioned in section [b] can be associated with Porphyry.[16] After expounding his own position on the issue (46:8–19), Avicenna provides a detailed refutation of each of the three cases. The refutation of the third case is the most extensive (48:1–49:7).

In chapter II, 1 of the *Ilāhiyyāt*, dealing with the distinction of substances and accidents, and the division of substances into three main types (matter, form, compound), Avicenna conclusively resumes the doctrine expounded in Text 3.

Text 4: *Ilāhiyyāt* II, 1 (58:10–16) [Lat. transl. Avicenna 1977, 1980, 66:30–67:39]

[a] Then many of those who arrogate knowledge to themselves judged possible for a thing to be [both] substance and accident at the same time with respect to two [different] things. They said that heat is an accident in what is not the fire's body, whereas in the whole fire it is not an accident, since it exists (*mawǧūda*) in [fire] as part and cannot be removed from fire, if fire has to remain. Therefore its existence (*wuǧūd*) in fire is not the existence of an accident. But, if its existence in [fire] is not the existence of an accident, its existence in it will be the existence of a substance.

[b] This is a big mistake. We have discussed it exhaustively at the beginning of logic, although that was not its [proper] place, since they make this mistake only there.

Text 3 and Text 4 are obviously related (see the reference to Text 3 in Text 4 [b]) and differ only in minor points.[17] Note the statement in Text 4 [b], according to which metaphysics, rather than logic, is the place where this doctrine should be discussed. This contention accounts for the repetition of Text 3 in Text 4, and is explained by two interrelated

[16] The opinion that Avicenna reports is similar, both in content and in the example adduced in text 4 (heat), to the theory that Porphyry expounds in his commentary on the *Categories* (Porphry 1887, 95:22–27) to explain how the specific difference of substance (itself a substance) can be, according to Aristotle, a quality (see Arist. *Top.* Δ, 2, 122b16–17; Δ, 6, 144a20–21). Porphyry's opinion is mentioned by Simplicius in his commentary on the *Categories* (Simplicius 1907, 78:21–23). Simplicius is probably the direct source of Avicenna. See Bertolacci 2006, 457–458.

[17] The item that is supposedly both an accident and a substance is whiteness in Text 3, heat in Text 4. Text 4 is not followed, like Text 3, by a lengthy refutation of the reported doctrine, although it includes the mention of its falsity.

facts. First, according to Avicenna, metaphysics provides the ultimate foundation not only for the doctrine of universals, as we have seen, but also for the doctrine of the categories; accordingly, he moves the traditional discussion of the basis of this doctrine from logic to metaphysics. Second, according to Avicenna, the doctrine of the categories in its entirety is, properly speaking, metaphysical rather than logical: if he deals with the doctrine of the categories in the logic of the *Šifā'*, rather than in the metaphysics (apart from examining its foundation there), he does so in order to comply with the traditional way of expounding the Aristotelian tradition.[18] Text 4 is a concrete example of these two points. First, the doctrine at hand is now repeated in metaphysics as part of the metaphysical foundation of the doctrine of the categories, because arguing that it is both a substance and an accident involves the consideration of the existence of the item under discussion (see the frequent references to 'existence' in both texts). Second, it has been already dealt with in logic in accord with the exegetical tradition from which the discussion derives (Porphyry).

III

Between the paraphrase of the beginning of *Posterior Analytics* A, 7 (75a39–75b2) in *Burhān* II, 6, and the paraphrase of the rest of this chapter and of the following one (*Post. An.* A, 8) in *Burhān* II, 8, Avicenna introduces an entire chapter (II, 7), totally absent in Aristotle's work, containing a very articulate account of the similarities and differences between the sciences.[19] Avicenna's insertion is similar to the one introduced by al-Fārābī in the account of the *Posterior Analytics* in the *Falsafat Arisṭūṭālīs* (*Philosophy of Aristotle*), and even more extensive than it.[20] In this chapter, Avicenna makes different remarks on the epistemological profile of metaphysics, called 'first philosophy', with regard to all its main aspects (subject-matter, structure, method, relationship with the other sciences).[21] The following passage is his

[18] See Gutas 1988, 265–267; Bertolacci 2006, 272–279.

[19] For an outline of this chapter, see Jolivet 1991, 1017–1019. Dominicus Gundissalinus isolated this chapter from the rest of the *Burhān* and incorporated its Latin translation in his *De Divisione philosophiae* (Gundissalinus 1903, 124–133).

[20] See Bertolacci 2006, 298–300.

[21] See Bertolacci 2006, 119 and n. 23; 165, n. 48; 233–234; 267 and n. 4.

description of the differences between metaphysics and dialectic and sophistic.

Text 5: *Burhān* II, 7 (165:17–166: 15) [Lat. transl. in Gundissalinus 1903, 130:1–131:3]

[a] The disciplines that share the subject-matter of this science [i.e. of first philosophy] are three: first philosophy [itself], dialectic (*al-ǧadal*) and sophistic (*al-sūfisṭā'iyya*). First philosophy, however, distinguishes itself from dialectic and sophistic in subject-matter (*mawḍū'*), in the principle (*mabda'*) of theoretical investigation, and in the end (*ġāya*) of theoretical investigation.

[b] As to subject-matter, [this is so] because first philosophy investigates only the essential accidents of 'existent' and 'one' and their principles, and does not investigate the essential accidents of the subject-matters of each of the particular sciences. Dialectic and sophistic, on the contrary, investigate the accidents – essential or non-essential – of every subject-matter, and neither of them restricts [its scope] to the accidents of 'one' and 'existent'. Thus, first philosophy is more common than the particular sciences on account of the commonness of its subject-matter. These [other] two [disciplines], on the contrary, are more common than the particular sciences on account of their investigation, since they discuss every subject-matter – directly or indirectly – of every [discipline] in accordance with [the procedure of] its discipline.

[c] [First philosophy] distinguishes itself from [dialectic and sophistic] with regard to the principle [of investigation]. For first philosophy takes its principles from premises that are apodictic and certain (*al-muqaddimāt al-burhāniyya al-yaqīniyya*). As to dialectic, its principle is from premises that are generally known (*al-ḍā'i'a*) and commonly accepted (*al-mašhūra*), [in so far as they are] truly [so]. As to sophistic, its principle is from premises that seem to be generally known (*al-ḍā'i'a*) or certain (*al-yaqīniyya*), but are not truly so.

[d] [First philosophy] distinguishes itself from [dialectic and sophistic] with regard to the end.[22] For the end of first philosophy is to attain what is true and certain, as far as it is possible for man. The end of dialectic, on the other hand, is to train [people] to assess and deny what is commonly accepted, as a way of proceeding towards demonstration and of [providing] utility to the city. Sometimes its end is to succeed in [the field of] justice. This justice sometimes is related to interaction [with someone else], sometimes to utility. That which is related to interaction consists in having a conclusion that is necessary on account of what is conceded, although the conclusion

[22] Reading: *min ǧihati l-ġāyati*, instead of *min ǧihatin* (cp. the reading *min ḥayṯu l-ġāyati* in Avicenna 1956, 109:7–8).

> is neither true nor correct. That which is related to utility, sometimes is for the truth, sometimes for praised correctness. The end of sophistic is to simulate wisdom, and to prevail by means of what is false.

In this text, Avicenna looks at the issue from three perspectives (those, respectively, of the 'subject-matter', 'the principle' and the 'end') that are properly epistemological: 'subject-matter' and 'principles' are two of the fundamental elements of every science, according to Aristotle's *Posterior Analytics*, whereas the 'end' (*ġāya*) evokes a further scientific aspect taken into account in the prolegomena to the commentaries of Aristotle's work, both in Greek and in Arabic, namely, the 'goal' (σκοπός, *ġaraḍ*) of the investigation. From this precise epistemological vantage-point, Avicenna discusses the differences between metaphysics on the one hand, and dialectic and sophistic, on the other, in a rather systematic way: after the introduction (section [a]), each of the three aspects is taken into account in explaining how metaphysics differs first from dialectic and then from sophistic (sections [b]–[d]). Avicenna's intention is to show, as clearly as possible, the radical distinction between metaphysics and the other two disciplines.

Text 5 is restated in a passage of the *Ilāhiyyāt* in which Avicenna reworks *Metaph.* Γ, 2, 1004b17–26, where Aristotle describes the similarities and the differences between metaphysics, on the one hand, and dialectic and sophistic, on the other.[23]

> Text 6: *Ilāhiyyāt* I, 2 (16:13–20) [Lat. transl. Avicenna 1977, 1980, 17:21–18:32]
>
> [a] The present science shares something, in a way, with dialectic (*al-ǧadal*) and sophistic (*al-safsaṭa*); it is different, in another way, from both of them; and it is different, in [still] another way, from each of them.
>
> [b] As to the things it shares with them, this is due to the fact that a scholar of a particular science does not discuss what is investigated in the present science, whereas the dialectician and the sophist do discuss it.
>
> [c] As to the difference [from both of them], it is due to the fact that the first philosopher [i.e. the metaphysician], *qua* first philosopher,

[23] See the comparison of this passage with its Aristotelian source in Bertolacci 2006, 381–386. This is one of the passages attesting Avicenna's reliance on an Arabic translation of the *Metaphysics* (probably by Isḥāq ibn Ḥunayn) different from the extant one (by Usṭāṭ).

does not discuss the questions of the particular sciences, whereas they [i.e. the dialectician and the sophist] do discuss [them].

[d] As to the difference from dialectic in particular, it is due to capacity (*quwwa*), since the dialectical discussion provides opinion (*al-ẓann*), not what is certain (*al-yaqīn*), as you have learnt in the discipline of logic.[24]

[e] As to the difference from sophistic, it is due to will (*irāda*), since the former [i.e. the first philosopher] wants what is true as such, whereas the latter [i.e. the sophist] wants to be regarded as a wise man who says what is true, even though he is not.

The two texts make roughly speaking the same point, although Text 6 is shorter, differently formulated and less coherently structured than Text 5.[25] Avicenna's general aim in both texts is the same: to distinguish metaphysics from dialectic and sophistic.[26] Whereas Avicenna regards dialectic and sophistic as less reliable and effective modes of argumentation than demonstration (as attested by many other passages of the logic and the metaphysics of the *Šifāʾ*),[27] he views metaphysics, on the contrary, as a demonstrative science.[28] This epistemological contrast, however, emerges more clearly in Text 5 than in Text 6: in this latter, Avicenna's contention (section [d]) that dialectic is capable of producing only 'opinion' (*al-ẓann*), not certainty (*al-yaqīn*), simply suggests that certainty is produced by a different discipline by means of

[24] The reference is to Ǧadal I, 1 (Avicenna 1965, 11:6–8, corresponding to *Top.* A, 2).

[25] Section [a] in Text 5 corresponds to sections [a]–[b] in Text 6, whereas sections [b]–[d] in Text 5 are analogous to sections [c]–[e] in Text 6. However, none of the three epistemological aspects taken into account in Text 5 is mentioned in Text 6: the 'subject-matter' is omitted altogether, whereas the technical terms 'principle' and 'end' are replaced by the more neutral expressions 'capacity' and 'will'. The similarity between metaphysics, dialectic and sophistic is more enhanced in Text 6 [b] than in Text 5, where it is simply alluded to at the beginning. In Text 6, whereas section [c] compares both dialectic and sophistic with metaphysics, section [d] compares only dialectic with metaphysics, and section [e] only sophistic with metaphysics. In describing the procedures of dialectic and sophistic in Text 6 [b]–[d], Avicenna constantly uses the verb 'to discuss' (*takallama*), or nominal forms related to it, like 'discussion' (*kalām*), with particular regard to dialectic (see 'the dialectical discussion', *al-kalām al-ǧadalī* in [d]). These terms might refer to the arguments *ad personam* ('dialectical' in the etymological sense) used by dialectic and sophistic. Avicenna might also allude to the dialectical procedures of Islamic theology (*kalām*).

[26] This is why in Text 6 Avicenna emphasizes, more than Aristotle does, the differences between metaphysics, dialectic and sophistic, by adding to Aristotle's original account, for example, section [c], which contains a further element of difference between the former discipline and the latter two.

[27] Bertolacci 2006, 232–245, 403–408.

[28] See Bertolacci 2006, 215–230.

a different method. Regrettably, the identity of this discipline, namely metaphysics, and the nature of the higher method used by it – demonstration – remain implicit. The corresponding section of Text 5, on the contrary, qualifies the premises used by metaphysics not only as 'certain' (*yaqīniyya*), but also as 'apodictic' (*burhāniyya*).

Why does Avicenna propose in metaphysics a text like Text 6 that is more succinct, tortuous and obscure than its counterpart in logic? The different contexts of the two passages provide an answer to this question. Text 5 is part of a chapter (*Burhān* II, 7) that has been rightly described as 'a remarkable work of epistemology' with 'a very formal structure'.[29] Text 6, on the other hand, represents a sort of appendix of *Ilāhiyyāt* I, 2, in which Avicenna paraphrases a passage of the *Metaphysics* at the end of a chapter in which he has constantly used the epistemology of the *Posterior Analytics* to elucidate the subject-matter (together with principles and properties) and the goal of metaphysics. Both the fidelity to Aristotle's quoted text, and the dependence on the previous part of the chapter in which it occurs, may explain the succinctness and lack of precision of Text 6 by comparison with Text 5.

IV

The topic of the predication of existence is discussed by Avicenna, for the first time in the *Šifāʾ*, in his reworking of the first chapter of the *Categories* in *Maqūlāt* I, 2.[30] Here, after having dealt with synonymy and before taking paronymy into account, Avicenna divides homonymous terms into three groups. Existence is adduced as one of the examples in the first group.

Text 7: *Maqūlāt* I, 2 (10:4–11:7)

[Tripartition of homonymous terms]

[a] As to what is not [predicated] by way of synonymy, in general it is said [to be predicated] by homonymy (lit.: coincidence of name, *ittifāq al-ism*). [This class] is divided into three groups. [1] Either the notion (*al-maʿnā*) in them [i.e. in the things whose name coincides]

[29] Jolivet 1991, 1017.

[30] The importance of this chapter of *Maqūlāt* is progressively emerging in the studies on Avicenna's thought: see Bertolacci 2004, 195 and n. 52; Bertolacci 2006, 389 and n. 26; Treiger 2010. In this article, Treiger provides an insightful analysis of Avicenna's chapter and a comprehensive reconstruction of its Greek and Arabic background, of which I have much profited for my own translation and interpretation of Text 7.

is one as such, although it is different in another respect [= ambiguous name]. [2] Or it is not one, but between the two things [whose name coincides] there is a certain resemblance. [3] Or it is not one, and between the two things there is no resemblance.

[1.1: The ambiguous name in its absolute sense]

[b] The things in which the notion is one, but are different afterwards [in another respect], are like the notion of existence (*wuǧūd*). [i] For [existence] is one in many things, but it is different in them, since it is not found in them according to a single form in every respect, in so far as it belongs to some of them before, to some others afterwards. [i.i] For the existence of substance [comes] before the existence of the other things that follow [substance], [i.ii] and also because the existence of some substances [comes] before the existence of other substances. [i.iii] Likewise, the existence of some accidents [comes] before the existence of others. This is the way of [predication according to] priority and posteriority (*ṭarīq al-taqaddum wa-l-taʾaḫḫur*).

[c] [ii] Likewise, [existence] may be different according to major [and minor] worth and appropriateness (*ṭarīq al-awlā wa-l-aḥrā*). For existence belongs to some things *per se* (*min ḏātihī*), to some others in virtue of something else (*min ġayrihī*). Now, what exists *per se* is worthier of existence than what exists in virtue of something else.

[d] Every thing that is prior with regard to a [certain] notion is also worthier of it, but not vice versa. For two things may share a certain notion in such a way that this latter does not belong to one of them before [and to the other afterwards], but both [relate] to it simultaneously (*maʿan*); nonetheless, one of them is worthier of it, by being more complete or more stable with regard to it.

[e] [iii] As to what is different by intensity and weakness (*bi-l-šadda wa-l-ḍaʿf*), it only applies to notions that admit intensity and weakness, like whiteness. Thus, 'whiteness' is not predicated of the whiteness in snow and the whiteness in ivory according to absolute synonymy /A11/, nor is 'philosophy' predicated of the philosophy of the Peripatetics and the philosophy of the Stoics according to absolute synonymy. We are just providing you with famous examples, about which one must be indulgent once [their] goal is grasped.

[f] The [name] in which the concept of the term is one when it [i.e. the concept of the name] is abstracted [from the single occurrences], although it is not one in every respect, and is similar in the things that participate in that term, is called an 'ambiguous name' (*ism mušakkik*), although sometimes it is called otherwise.

[1.2: The ambiguous name in its relative sense]

[g] An ambiguous name may be absolute (*muṭlaq*), as we have said. But it may [also] be [predicated] on account of the relation (*bi-ḥasab al-nisba*) [i] to a single principle, as when we predicate 'medical' of the book, the dissecting knife, and the remedy, [ii] or to a single end, as when we predicate 'healthy' of the remedy, the exercise, and

> the phlebotomy. [iii] Sometimes it is [predicated] on account of the relation to [both] a [single] principle and a single end, as when we say that all things [of the universe] are divine.

In section [a] homonymous terms are divided into three groups. In the first, they share the same notion in different ways; in the second, they do not share a single notion, but they nonetheless present some similarities; in the third, they neither share a single notion nor do they present similarities. The treatment of the first group – called the 'ambiguous name' (*ism mušakkik*) in section [f] – is the most carefully worked out. It is divided in two main parts (1.1, 1.2): in the first, the ambiguous name is taken absolutely, that is the occurrences of the name are related to each other but are not related to any additional factor. In the second, on the contrary, the occurrences of the ambiguous name refer to an additional factor. Both parts present a tripartite classification (see cases [i], [ii], [iii]).

Existence is given as an example of the first two cases of the first threefold classification in (1.1). The first mode is expressly named 'according to priority and posteriority', and concerns the categories. It is divided into three areas: homonymy regarding the predication of existence of substances and accidents ([i.i]), different types of substances ([i.ii]), and different types of accidents ([i.iii]). Avicenna envisages a kind of hierarchy according to which, first, accidents are related to a first type of accident according to priority and posteriority, second, all accidents are dependent on substances according to priority and posteriority, and third, substances are related to a first type of substance according to priority and posteriority.[31]

The second mode of predication of existence in (1.1) is named by means of an expression that may be translated 'according to major and minor worth and appropriateness.' My impression is that this mode concerns a case of predication of existence that Avicenna regards as sharply distinct from the previous one, namely the case in which existence is predicated of God and the created world. First of all, although the two types of predication are not rigidly distinct from one another, section [d] shows that the second type of predication of existence

[31] In section [d], the presence of the adverb 'simultaneously' (*maʿan*) might suggest that the priority and posteriority in the first classification regards time: if this is really the case, Avicenna's point would be that some accidents are chronologically prior to others, that substances are chronologically prior to accidents, and that some substances are chronologically prior to others.

encompasses instances that the first type does not include. Second, in the context of case [iii] Avicenna speaks of the things to which existence belongs *per se*, and the things to which existence belongs in virtue of something else. Although these two expressions might refer to substances and accidents respectively, they call to mind passages of the metaphysics of the *Šifāʾ*, in which they are used to distinguish the Necessary Existent – God, from possible existents – created things. Thus, Avicenna contrasts God, as the only existent having existence *per se*, with all the other things, because they have existence from something else, and portrays God as the only existent properly 'deserving' existence, thus evoking the second type of predication of existence in (1.1).[32] Significantly, in various passages of the following treatises of the metaphysics of the *Šifāʾ*, Avicenna places God's existence outside the context of the categories, saying that God is not a substance.[33]

It would seem then that the first type of predication of existence described by Avicenna in (1.1) applies in particular in the context and at the level of the categories (existence as predicated of substance and accidents), whereas the second type of predication is proper to exis-

---

[32] *Ilāhiyyāt* VIII, 3 (342:8–9, 17–18, 343:2–6 [Lat. transl. Avicenna 1977, 1980, 396:21–23, 39–41, 397:46–52]: "Therefore, everything except the One that is one *per se* (*li-ḏātihī*) and the Existent that is existent *per se* (*li-ḏātihī*) receives the existence from something else (*min ġayrihī*). Due to [this other thing] it is a 'is', whereas *per se* it is a 'not is'. […] Everything starts to exist from this One, and this One makes it start to exist, since what is made start to exist is what is after not having been. […] The 'after' [we are speaking of] here…is the 'after' that is by essence. For the entity that belongs to something on account of itself (*min tilqāʾ nafsihī*) is prior to [the entity] that belongs to it from something else (*min ġayrihī*). If existence and necessity belong to it from something else (*min ġayrihī*), then non-existence and possibility will belong to it from itself (*min nafsihī*). Its non-existence will be before its existence, and its existence will be after its non-existence, according to a priority and posteriority [that are] by essence. Thus, the existence of everything except the First One is after not having been, in conformity to what it deserves [by] itself" (*bi-stiḥqāq nafsihī*); VIII, 6 (356:12–13) [Lat. transl. Avicenna 1977, 1980, 413:88–91]: '[This is so] because the quiddities of [the things other than the Necessary Existent], as you know, do not deserve (*lā tastaḥiqqu*) existence; on the contrary, in themselves and independently from their relationship to the Necessary Existent, they deserve (*tastaḥiqqu*) non-existence' (the reference 'as you know' appears to be to the previous text). Even though Avicenna does not state expressly in the *Ilāhiyyāt* that God's existence is homonymous with the world's existence, a statement like '[the First] does not share [anything] with what derives from it' (VIII, 5, p. 354:13 [Sat. transl. Avicenna 1980, 411:47]) can be read along these lines.

[33] See the remarks on the Necessary Existent not being a substance in II, 1, p. (60:5–8) [Sat. transl. Avicenna 1977, 1980, 68:70–75], and VIII, 4, 348:6–349:6 [Sat. transl. Avicenna 1977, 403:74–404.1].

tence as predicated of God, on the one hand, and the world, on the other, on the transcendental level.

In the second tripartite classification of ambiguous names in (1.2), cases [i] and [ii] reproduce the traditional distinction of predication ἀφ' ἑνός and πρὸς ἕν together with the celebrated examples of the predication of the terms 'medical' and 'healthy'. Case [iii] is interesting: it is a kind of combination of the previous two. It teaches that all things can be said to be 'divine' in relation to a single principle and to a single end; the possibility of this predication derives apparently from assuming that God is both the efficient and the final cause of the universe, and that all things possess divinity because they come from and go back to God.

Avicenna's Text 7, as well as his overall account of homonymy, synonymy and paronymy in *Maqūlāt* I, 2, depends in different respects, either directly or indirectly, on the Greek exegetical tradition of the *Categories*, which in its turn systematizes scattered passages of the Aristotelian *corpus*, and on its Arabic reception.[34]

In the *Ilāhiyyāt*, the theme of the multivocity of 'existence' and 'existent' is first adumbrated and then treated *ex professo* in chapter I, 5.[35] In this text, Avicenna reworks the passage of *Metaph.* Γ,

[34] Treiger 2010 documents that cases [i] and [ii] of section (1.1) derive from al-Fārābī. As to section (1.2), the characterization of case [i] in terms of relation to a 'principle' (*mabdaʾ*) resembles the mention of the 'principle' in the corresponding place of Philoponus' so-called 'first' commentary on the *Cat.*; cp. the mention of the 'agent' and the 'principle' in al-Ḥasan Ibn Suwār, *Taʿlīqāt ʿalā Kitāb al-Maqūlāt* Georr 1948, 368:2. The characterization of case [ii] in terms of relation to an 'end', and the examples ('medical', 'healthy') of cases [i]–[ii], are common to the entire Greek exegetical tradition (Porphyry, Ammonius, Philoponus, Simplicius) and its Arabic reception (Ibn Suwār *Taʿlīqāt ʿalā Kitāb al-Maqūlāt* Georr 1948, 368:2–6; Abū l-Farağ Ibn al-Ṭayyib, *Tafsīr Kitāb al-Maqūlāt* in Ferrari 2006, 37:31–31:7. Case [iii] follows cases [i] and [ii] also in the commentary on the *Categories* by Abū l-Farağ ibn al-Ṭayyib, a contemporary of Avicenna (see Ferrari 2006, 38: 8–10; this case is not taken into account by Ibn Suwār); the parallel presence of a similar case in Ibn al-Ṭayyib might indicate the existence of an intermediate, probably Arabic, source common to both Avicenna and Ibn al-Ṭayyib (see, on this, Treiger 2010). The doctrine of case [iii] (all things are divine since they come from a single principle and go back to a single end) occurs in a passage of Simplicius' commentary on the *Categories* (*In Cat.* 4, pp. 74, 28–75, 5; see Simplicius 2001, 65; 777–779), although in the commentary it is not part of, and comes much later than, the discussion of cases [i] and [ii]. I have dealt in detail with this topic in the communication 'Simplicius in Avicenna's reworking of Aristotle's *Categories*', Journées *Les Catégories: la tradition arabe*, Australian Research Council, CNRS (Paris), Paris 3–4 avril 2009 (A. Hasnaoui, P. Thom).

[35] *Ilāhiyyāt* I, 5 (31:8) [Lat. transl. Avicenna 1977, 1980, 35:59–60]: 'For also by means of the term 'existence' many notions are signified…'.

2 (1003a33–b19) commonly known as Aristotle's theory of the 'focal meaning' of 'being'.[36]

> Text 8: *Ilāhiyyāt* I, 5 (34:15–35:2) [Lat. transl. Avicenna 1977, 1980, 40:46–53]
>
> [1a] We say now that 'existent', even though it is neither a genus, as you know, [1b] nor is it predicated in an equal way of what is beneath it,
>
> [2a] is nonetheless a notion in which [the various instances] coincide (*maʿnan muttafaq fīhi*) by means of priority and posteriority (*ʿalā l-taqdīm wa-l-taʾḫīr*). [2b] The first thing to which it belongs, is the quiddity that is substance; afterwards, it belongs to what comes after [substance].
>
> [3a] In so far as it is one notion, in the manner we have alluded to, [3b] some accidents that are proper to it pertain to it, as we have clarified before.
>
> [4a] Therefore, it has one science charged with studying it, [4b] as everything that is healthy has one science [charged with studying it].

Text 8 establishes four main points. The first two concern the way in which 'existent' is predicated: Avicenna contends, in negative terms, that 'existent' is not a genus ([1a]), and that it is not predicated univocally ([1b]).[37] Then, in positive terms, he maintains that 'existent' is predicated according to priority and posteriority ([2a]), and that substance is the first thing of which it is predicated ([2b]). Other passages of the *Ilāhiyyāt* make clear that, with respect to the status of 'existent', substance is prior to accident (described as 'what follows substance' in [2b]).[38] The other two points regard how, on account of the way

---

[36] This theory represents Aristotle's solution of the major epistemological antinomy of the *Metaphysics* ('being', in order to be the main theme of a science, has to be a genus, but, as such, it is not): Aristotle contends that 'being' is a 'quasi-genus', since all its various meanings refer to a primary meaning (substance), and that therefore can be investigated by a science, i.e. metaphysics. Avicenna reproduces, with some significant difference, Aristotle's main point. A detailed comparison of Avicenna's reworking with Aristotle's text is provided in Bertolacci 2006, 386–390.

[37] Avicenna makes explicit what is implicit in Aristotle's text, namely that 'existent' is not a genus. He then paraphrases in negative terms what Aristotle states in positive terms about the way according to which 'being' is predicated: Aristotle maintains that 'being' is predicated πολλαχῶς, i.e. 'in many ways' (1003a33 and b5), whereas Avicenna states that 'existent' is not predicated 'in an equal way', or 'according to equality' (*bi-l-tawāsī*). The phrase 'as you know' refers, beside Text 7, to places like *Madḫal* I, 11 (64:4–9); *Maqūlāt* II, 1 (62:3–9).

[38] In II, 1, for example, Avicenna maintains that substance is the 'prior' (*aqdam*) division of the existents *per se* (57:7) [Lat. transl. Avicenna 1977, 1980, 65:8]), and that it is the prior item (*al-muqaddim*) in existence (58:3–4) [Lat. transl. Avicenna 1977,

according to which it is predicated, there can be a science of 'existent': 'existent' is one notion or entity, and it has some proper accidents or properties ([3]);[39] thus, there is one science of 'existent', as in the similar case of the one science of what is healthy ([4]).[40]

Text 8 is similar to Text 7 in the description of 'existent' as 'a notion in which the various instances coincide' (*maʿnan muttafaq fīhi*), corresponding to the insertion of existence in the context of homonymy, characterized as predication 'by coincidence of name' (*bi-ttifāq al-ism*), in Text 7 [a]. Likewise, the mode of predication of 'existent' in Text 8 is qualified as 'according to priority and posteriority' (*ʿalā l-taqdīm wa-l-taʾẖīr*), with a formula that is almost verbatim the same as that used in Text 7 [b] to describe the first mode of predication of existence ('the way of priority and posteriority', *ṭarīq al-taqaddum wa-l-taʾaẖẖur*). By comparison with Text 7, however, Text 8 shows three main differences. First, in Text 8 Avicenna is selective: he mentions only one of the three cases of predication of existence 'according to priority and posteriority' envisaged in Text 7, the predication of existence regarding substances and accidents ([i.i]), omitting the predication regarding only substances ([i.ii]) and only accidents ([i.iii]); furthermore, he does not take into account at all the second mode of predication of existence mentioned in part (1.1) of Text 7, namely

---

1980, 66:22–23]) with respect to accident. Cp. V, 8 (243:5–6 [Lat. transl. Avicenna 1977, 1980, 272:18–19].

[39] Section [3a] is connected with section [2a]: 'in the manner we have alluded to' means 'according to priority and posteriority'. Section [3b], on the other hand, resumes one of the main epistemological features of metaphysics, namely the fact that this discipline – as every other science, according to the rules of Aristotle's *Posterior Analytics* – demonstrates the properties of its subject-matter. The phrase 'as we have clarified before' refers to texts like *Ilāhiyyāt* I, 2, (13:12–13) [Lat. transl. Avicenna 1977, 1980, 13:36–38]. Thus, the whole section [3] aims at elucidating: (i) that 'existent' is one notion ([3a]); (ii) that, in so far as it is one notion, it has some properties ([3b]); (iii) and that, in so far as it has some properties, it can be the subject-matter of a science.

[40] Section [4] corresponds almost *verbatim* to *Metaph.* 1003b15–16 ([4a]) and b11–12 ([4b]). In these two passages, after having compared the 'focal meaning' of 'being' with the 'focal meaning' of 'healthy' and 'medical', Aristotle focuses on 'healthy' in order to clarify that, as there is a science of what is healthy (Aristotle probably means physiology), likewise there is a science of 'being' (that is, metaphysics). Avicenna does the same, inverting, however, the order: there is one science of 'existent', according to Avicenna, as there is one science of what is healthy. In Z, 4, 1030a34–b3, on the contrary, Aristotle selects 'medical' as example of the 'focal meaning' of 'being'. The peculiar way in which metaphysics is a science is recalled also in *Ilāhiyyāt* VI, 5, (299:4–5) [Lat. transl. Avicenna 1977, 1980, 346:83–84].

the predication 'according to major and minor worth and appropriateness' (case [ii]). Second, he adds new material: the epistemological considerations on the science of 'existent' are totally absent in Text 7. Third, he modifies the content: he joins the predication of 'existent' with an example ('healthy') that in Text 7 occurs within the second classification of homonymy (case [ii]), and is not related directly to the predication of existence.

The reason for these differences are the different contexts of the two passages. Text 7 provides a general and independent treatment of homonymy, in which all the possible cases of homonymous predication are considered. Text 8, on the other hand, is meant to reproduce the content of the passage from *Metaph.* Γ, 2, and to assess the unity of the science of 'existent *qua* existent': from this follows the selection of the case of priority and posteriority regarding substance and accidents, the connection of 'existent' with 'healthy', and the epistemological overtones. The omission in Text 8 of the entire second type of predication of existence in Text 7 can be accounted for in two ways. First, the mention of two ways of homonymous predication of existence, instead of one, as in Text 7 might have weakened Avicenna's claim in Text 8 that the science of 'existent *qua* existent' is a single and unified discipline. Second, Text 8 comes before the first extensive discussion of God's existence in the *Ilāhiyyāt* (I, 6–7): Avicenna might have thought it appropriate to avoid mentioning the second type of predication of existence, the one involving God's existence, at this early stage. Significantly, in various passages of the following treatises of the *Ilāhiyyāt* we find relevant hints of the features of God's existence evoked in the second type of predication of existence in Text 7.[41]

The importance of Text 8 in the historical process of transformation of Aristotle's theory of the predication πρὸς ἕν of 'being' into the medieval doctrine of the 'analogy' of 'being' has already been stressed.[42]

---

[41] See above, nn. 32–33.

[42] See Libera 1989, 319–345, 328–337. De Libera insists in particular on the importance of Avicenna's view of 'existent' as a point of convergence (*muttafaq fīhi*), according to anteriority and posteriority, of the various things of which it is predicated (section [2a]). The idea of a priority and posteriority among the meanings of 'existent' has a background in Aristotle. In Γ, 2, 1003b5–6, b16–18, Aristotle calls substance 'principle' (or 'starting-point') and 'what is primary' among the things of which 'being' is predicated. *Metaph.* Z, 4, 1030a21–22, is strikingly similar to section [2a]: in this passage Aristotle compares the 'focal meaning' of the verb 'is' to the 'focal meaning' of the expression 'what is it', or essence, and he says that 'is' is predicated

However, the place to look for Avicenna's seminal endorsement of the doctrine of the analogy of being is not Text 8, in which this doctrine does not occur as such and seems intentionally omitted, but its parallel passage in logic. In Text 7, rather than in Text 8, Avicenna envisages, not only a homonymous predication of existence about the categorial realm of substances and accidents, but also a different type of homonymous predication of existence connected with the 'analogical' dimension of the relationship between God and the created world.

Conclusion

All the cases discussed in the present paper share a common feature: the treatment in logic of a certain theme is more comprehensive and more detailed than its treatment in metaphysics. This happens not only with doctrines, like universals and categories, traditionally associated with logic (cases I–II), but also, quite surprisingly, with doctrines concerned directly with metaphysics, like the non-dialectical and non-sophistical character of metaphysics and the focal meaning of 'existent' (cases III–IV).

There is an obvious explanation for this fact: regardless of the relative chronology of the different parts of the *Šifāʾ*, in the final arrangement of this work logic comes before metaphysics, and the first account of a certain topic in logic is naturally longer than its resumption later on in metaphysics.[43] As a matter of fact, logic is by far the most extensive part of the *Šifāʾ*, being much longer than the parts on natural philosophy and metaphysics taken together, a situation that the secretary and biographer of Avicenna al-Ǧūzǧānī tried to explain by pointing at the

---

either in a primary way (of substance) or in a secondary way (of accidents). Unfortunately this passage of the *Metaphysics* is not contained in Uṣṭāṭ's Arabic translation (in the form in which this is extant), nor is it attested by the additional translations that Averroes occasionally quotes in the Long Commentary on the *Metaphysics*. For the idea of a priority and posteriority among the meanings of 'being', see also *Metaph.* Δ, 11, 1019a1–11.

[43] The secretary and biographer of Avicenna al-Ǧūzǧānī, both in his Introduction to the *Šifāʾ* and in his biography of the master, points at a peculiar genesis of the *Šifāʾ*, according to which the logic of this work was written *after*, not before, natural philosophy and metaphysics. Avicenna, however, might have intentionally shortened the treatment of certain topics in metaphysics (composed earlier) in order to discuss them again more at length in logic (composed later).

significant number of books that Avicenna had at his disposal during the composition of the logical part.[44]

So far as the relationship between logic and metaphysics is concerned, the cases discussed above present an ambivalent scenario. The first two examples show that the foundation of the logical doctrines of universals and categories is provided by metaphysics: case I concerns the actual metaphysical foundation of the doctrine of universals, whereas case II provides an instance of Avicenna's idea that the fundamental tenets of the doctrine of the categories should be discussed in metaphysics rather than in logic. The two latter examples, on the contrary, point to the independence of logic with regard to metaphysics, instead of the reliance of the former on the latter: the general epistemology of metaphysics, and the concrete description of how the subject-matter of metaphysics ('existent') is predicated, are dealt with in logic before metaphysics and autonomously from it. The differences between the logical and the metaphysical treatment of these cases (less marked in case III, more profound in case IV) can be explained by the different goals that Avicenna is pursuing in each case, and by his recourse to distinct sources (the tradition of the commentators of the *Categories* and al-Fārābī, on the one hand, the *Metaphysics*, on the other), thus corroborating the impression of independent perspectives on the issues dealt with. Whereas the first scenario is congruent with Avicenna's view of the hierarchical classification of the sciences, the second scenario shows that logic, albeit dependent on metaphysics for the scientific foundations of its principles, remains nonetheless, in Avicenna's opinion, an autonomous discipline.

---

[44] Wishing to explain why in this work logic 'grew longer' than the other parts, and why the logic of the *Šifāʾ* is less original with respect to the Aristotelian canonical text than natural philosophy and metaphysics, in the Introduction to the *Šifāʾ* al-Ǧūzǧānī reports that Avicenna consulted books only while writing the part on logic, thus being able to follow more closely Aristotle's order of exposition; natural philosophy and metaphysics, on the contrary, according to al-Ǧūzǧānī, were written without recourse to any book. Al-Ǧūzǧānī's report about the supposed unavailability of books during the composition of the physics and metaphysics of the *Šifāʾ* has already been proved to be unreliable (see Gutas 1988, 106–112). Also the analysis proposed here weakens this claim, since the account of doctrines III–IV in metaphysics is shorter than in logic *just because* in Text 6 and Text 8 Avicenna is quoting or paraphrasing Aristotle's *Metaphysics*. The hypothesis that all the quotations of the *Metaphysics* in the *Ilāhiyyāt* are the result of Avicenna's youthful memorization of this work is unlikely on account of his recourse to different Arabic versions of Aristotle's work (see Bertolacci 2006, 310–316).

The further issue discussed in the present contribution – the presence in logic of ontological doctrines – discloses a further tension between cases I–II, where ontology is the domain, external to logic, in virtue of which metaphysics provides the foundation of universals and categories, and cases III–IV, in which logic delves on its own into ontological matters. This is especially striking in case IV, in which the logical account includes fundamental doctrines that the metaphysical account does not contain and that metaphysics in general seems to presuppose. This aspect can be explained not only by material considerations such as the ones previously advanced (structure of the *Šifāʾ*, different sources of its distinct parts, etc.), but also by deeper theoretical reasons regarding Avicenna's conception of logic. According to Avicenna, the question of whether logic is an instrument of philosophy or a part of it (an *aut-aut* question) is wrongly formulated, since logic can be both an instrument and a part of philosophy from different perspectives: but if one takes logic simply as an instrument of philosophy (the alternative towards which Avicenna seems in fact to incline),[45] by regarding philosophy as an investigation into the existence of things, logic – despite not being part of philosophy – remains nonetheless 'useful for the examination of the existence of things.'[46] This usefulness of logic with respect to philosophy understood as ontology – a point that Avicenna does not further develop – possibly justifies the presence in the logic of the *Šifāʾ* of the ontological sketches we have detected. In sum: if all the examples of doctrines expounded in logic and repeated in metaphysics that the present article has taken into account are concerned, to different degrees and extents, with issues of ontology, the resulting 'ontologization' of logic is not accidental. Rather, it is compatible with a conception of logic as universal tool for knowledge, coextensive with philosophy understood as general ontology, and therefore partially overlapping with metaphysics understood as the science of being qua being.

---

[45] Avicenna 1964, chapter I, 2.

[46] *Madḫal* I, 2, (15:17–16:3) [Latin translation, Venice edn. f. 2^{r}b–^{v}a]; see Marmura 1980, 250. The subject-matter of logic is identified by Avicenna with those properties of the mental existents – like being a subject or a predicate, being universal or particular, being essential or accidental etc. – that are capable of conducing the mind from the known to the unknown (*Madḫal* I, 2, (15:1–17), see Marmura 1980, 247–250); I, 4 (22:7–12), see Sabra 1980. Thus, albeit more particular than 'existent *qua* existent' (the subject-matter of metaphysics), the subject-matter of logic is nonetheless related to this latter.

AVERROES AND THE LOGICAL STATUS OF METAPHYSICS

Matteo Di Giovanni

The status and the nature of logic have represented a problem for Aristotelians of every age. Most clues to Aristotle's conception of logic can be found in the Organon, but what emerges therefrom is a conception that is difficult to frame in an unequivocal way: on the one hand, Aristotle's logical treatises leave us with a body of doctrines and claims that are fairly consistent with an idea of logic as a full-fledged and self-contained discipline, based on a set of fundamental intuitions and developed in accordance with them. Logic appears, in this respect, as a stand-alone science of the thinkable and of its conditions in the mind. On the other hand, unlike other sciences in the Aristotelian system, the body of doctrines that is developed in the Organon is not about some particular aspect of the world but, rather, about the way in which the sciences themselves can be approached and developed. In this sense, logic appears to be not so much a science in its own right as an introduction to, and a preparation for, science itself, and is more similar to an instrument than a substantive component of philosophy.

A promising way to deal with the status of logic is to analyze its relationship to metaphysics. The two disciplines have in common some essential features, the most important of which is, no doubt, their generality in scope. Logic deals with everything that is thinkable and metaphysics deals with everything that exists. Both logic and metaphysics have some claims to universality and both consider the totality of what there is, either in the realm of thought or in the realm of actual existence. This special connection is already, in itself, a valid reason to embark on a close comparison between logic and metaphysics. However, such a comparison is all the more to the point when it comes to the general interpretation of the relationship between logic and metaphysics that we find in Averroes (1126–1198), the Cordoban Philosopher and Commentator of Aristotle who perpetuated the tradition of Arabic Aristotelianism in Muslim and in Christian Europe. Averroes considers logic to be not merely related in a special manner to metaphysics, but even fully integrated into metaphysics itself. Logic

is, to an extent, a part of metaphysics and an essential element in its configuration; conversely, metaphysics is the inquiry that most appropriates and gives a new orientation to the basic teachings of logic. Metaphysics, in this sense, has a 'logical' status.

Within an Aristotelian framework, the status of a science is defined in terms of its subject-matter and demonstrative premises. For Averroes, accordingly, it is in the light of both these components that the logical status of metaphysics can be established. With regard to demonstrative premises, Averroes assumes that metaphysics can take some of its starting points from logic and that the doctrines from which logic, as a science, is constituted can occasionally appear within the metaphysical investigation. As regards the subject-matter of metaphysics, Averroes maintains that if it is possible to combine logic and metaphysics at all, this is because logic and metaphysics have the same subject-matter, which is 'absolute being' or being without qualification.

The characterisation of logic as having the same subject-matter of metaphysics is a crucial aspect of Averroes. The rationale behind this view probably lies in Aristotle's theory of demonstration and, particularly, in the condition of appropriateness that Aristotle sets for demonstrative premises in the *Posterior Analytics*. Its theoretical foundation is represented by one of Averroes' most distinctive doctrines, namely, that substantial form, which is absolute being and the subject-matter of metaphysics, is really identical with species, which is mental being and the subject-matter of logic. Both of these views, that logic shares the same subject-matter of metaphysics, and that metaphysics relies on the doctrines of logic, are combined by Averroes into a coherent picture, where philosophical assumptions play a major role along with exegetical concerns. The following analysis will attempt to bring to light the meaning and the philosophical implications of the main issues that are involved in Averroes' account of logic, of metaphysics, and of their mutual relations.

Different Views of Logic

Occasionally, Aristotle presents his inquiries as conducted in accordance with a 'logical method' (λογικῶς) and interpreters have long sought to understand what such a 'logical method' consists in. On the one hand, it is tempting to understand it as somehow bearing either on logic as a discipline or on Aristotle's logical treatises; on the

other hand, it is well known that when Aristotle refers to his logical claims in the Organon he employs different terms, such as 'dialectical' (διαλεκτικός) and 'analytical' (ἀναλυτικός).

Myles Burnyeat has recently pointed out two instances of what a logical inquiry can be according to Aristotle.[1] In one sense, Aristotle presents his inquiries as 'logical' to indicate the general and abstract level on which the analysis is placed and the fact that his analysis leaves aside the principles peculiar to the science at issue. In this sense, 'logical' is often contrasted with 'physical' (sometimes even with 'analytical') and marks those passages, in an argument, where the philosophical analysis makes abstraction of the principles that are proper, for example, to physics or to logic itself.[2] Burnyeat associates this sense of 'logical' with the name of the Late Antique commentator Simplicius, who, in his commentary on the *Physics*, defines a 'logical' aporia (λογικὴ ἀπορία) as an aporia that concerns generalities rather than specific principles. An instance of a 'logical' discussion in Simplicius' sense can be found, for example, in *Physics* III, 5, where Aristotle demonstrates, both on 'logical' and on physical grounds, that no bodies can be infinite. 'Logically' speaking, the notion of 'infiniteness' is in contrast with the notion of 'body' (as the infinite has no limits, whereas bodies are, by definition, limited by a surface); whereas, physically speaking, the infinite is incompatible with the natural properties of bodies, such as the properties of being heavy or light. For these properties can direct a body towards either the upper or the lower regions of the universe, whereas no upper or lower positions can be found in the infinite.[3]

A different sense of 'logical' is implied in some texts where Aristotle refers to the formal correctness of arguments, rather than to the general level of analysis. In this vein, Aristotle observes (*Met*. IV, 3) that whoever engages in metaphysical inquiries must have some prior

---

[1] Burnyeat 2001, 19–26. My own categorization of the possible senses of 'logical' is inspired by Burnyeat's analysis but it is not, and does not intend to be, a literal reproduction of it. It must be noted, in particular, that Burnyeat, contrary to Averroes, does not distinguish between Andronicus' and what I call Zeno's sense of 'logical.' It is also worth noting that Burnyeat's purpose is to emphasise that the various senses of 'logical' are closely connected and can be treated as one (25).

[2] 'Logical' is contrasted with 'physical' in *De Gen. et Corr.* 316^{a}11; *De Caelo* 280^{a}32; it is contrasted with 'analytical' in *Post. Anal.* 82^{b}35–36 and 84^{a}7–8, b 2. See, also, *Post. Anal.* 86^{a}22, 88^{a}19.

[3] *Phys*. 204^{b}5–205^{b}31. See also *Phys*. 264^{a}7–9; *De Caelo* 275^{b}12; *De Gen. Anim*. 747^{b}28–30.

knowledge of what is stated in the *Analytics*, lest he make logical mistakes and think that common axioms can be demonstrated.[4] Here the term 'logical' (λογικός) does not appear, to be sure, but the whole passage contains what a certain strand in the Aristotelian tradition would view as a logical remark. In this sense, 'logic' is conceived of as a technique to construct sound arguments, which is the technique required by, and preliminary to, the rigorous development of all particular sciences. Holding to Burnyeat's classification, I shall label this as Andronicus' sense of 'logical': Andronicus of Rhodes was the first editor of Aristotle and the one who placed Aristotle's writings in their current order. By placing the logical texts ahead of all others, Andronicus, as it were, consecrated the view that the logical treatises are preliminary to the philosophical ones, and that logic is a mere instrument (ὄργανον) rather than a substantive part of philosophy.[5]

When we take into consideration Averroes' understanding of the 'logical' sections in Aristotle, we realise that both Simplicius' and Andronicus' intuitions are effectively at work. In Averroes' *Middle Commentary* on the *De Caelo*, the two accounts are laid out in a very few lines. Averroes comments on a passage from *De Caelo* I, 7, where Aristotle argues for the finiteness of the universe (*De Caelo* I, 5–7) by showing that what is infinite can have no movement. Since nothing that is infinite can act or suffer, whereas sensible bodies do act and suffer, Aristotle concludes that no sensible body, not even the utmost sphere of the universe, can be an infinite body ($274^{b}33$–$275^{b}8$). In his paraphrase, Averroes refers to what I have labelled Andronicus' account and drops a remark about the instrumental function of logic. He notices that one will be able to see Aristotle's argument in the *De Caelo* as a syllogism in the second figure if he is already familiar with the *Prior Analytics* and with the syllogistic theory therein.[6] In so doing, Averroes clearly takes logic as a discipline concerned with the formal

[4] *Met*. $1005^{b}2$–5.

[5] See Goulet 1994, I, 482–483.

[6] 'If you agree that the infinite cannot act, and if you also agree that every sensible body is either active or passive, then, *if you have read the* Prior Analytics, it will be apparent to you that these two premises conclude, *in the second figure*, that no sensible body is infinite.' (emphasis added) Averroes 1984b, 115. For further occurrences of Andronicus' sense of 'logical' in Averroes' *Long Commentary* on *Met*. IV, 3 and 4, see Averroes 1938–48, I, 342:5–14 and 352:5–8. For Averroes' view of logic as an intellectual training preliminary to the study of philosophy, cf. Hugonnard-Roche 2002.

correctness of reasoning and preliminary to other, more substantive, kinds of investigation.

A few lines below in the same chapter (275^{b}12–18), Aristotle bases his analysis on what he calls 'more logical' arguments (λογικότερον); and, in fact, his inquiry takes on a more general character and focuses on the abstract notion of 'infinite body' as opposed to the particular features of natural bodies. Being infinite is, in itself, incompatible with having a centre, and so nothing that is infinite can have a circular motion; for circular motion requires a centre around which rotation takes place. Nor can anything that is infinite have a linear movement. For linear movement implies the existence of two places which the moving body can subsequently occupy, whereas the existence of two infinite places is, in itself, logically impossible. In his paraphrase, Averroes observes that this proof is a 'logical' clarification (*fa-huwa min jins al-bayānāt allatī tuʿrafu bi-l-manṭiqiyya*) and he takes 'logical' in Simplicius' sense. For Averroes, the argument is of the same kind as proofs that rely on premises which are true but general, that is, not proper (*khāṣṣa*) to the subject considered.[7] Logic here amounts to a consideration that makes abstraction of the peculiar features of the natural world and focuses, instead, on conceptual analysis and on the meaning of terms.

It would be interesting to give a complete list of the texts where Averroes refers to either Simplicius' or Andronicus' accounts. What is most relevant here, however, is that we find in Averroes also a third account which is clearly distinct from either Simplicius' or Andronicus' and which is highly relevant to Averroes' own philosophical discourse. According to this account, philosophical inquiries are 'logical'

[7] 'As regards the third clarification, it falls within the range of the clarifications that are known as 'logical'. These are constituted by premises *general* and true, *which are not proper to the genus considered*. This is the difference between these and essential premises: essential premises are proper (*khāṣṣa*) to the genus considered, as well as appropriate (*munāsiba*) to it. Also, the difference between these logical premises (*hādhihi l-muqaddimāt al-manṭiqiyya*) and dialectical premises is that these are true universally and essentially, whereas dialectical premises are partly false and are not universally true except by accident. Here Aristotle makes use of this kind of demonstration, I mean the one constituted by premises general and true.' (emphasis added) Averroes 1984b, 116. For further occurrences of Simplicius' sense of 'logical' in Averroes' *Long Commentary* on *De Caelo* I, 7 and on *Met.* XII, 1, see Averroes 2003, 134–135, and Averroes 1938–48, III, 1418:2–10 (Eng. trans. in Genequand 1986, 71). See also Averroes' *Middle Commentary* on *De Gen. Anim*. VI in Averroes, 1562–74b, f. 89$^{ra–rb}$.

in the sense that they make use of premises drawn from the discipline of logic or, which is the same for Averroes, from the logical writings collected in the Organon. Logic is no longer conceived of as mere instruction as to valid arguments and correct ways of reasoning but, rather, as a repository of substantive doctrines and of distinct philosophical views. As in Andronicus' account, logic is now taken as a sort of knowledge preliminary to further, and more detailed, philosophical inquiries; but contrary to Andronicus' account, in this case the preparatory character of logic bears on positive philosophical doctrines rather than on formal procedures and argumentative techniques.

In order to avoid possible confusion between the two accounts, and to keep Averroes' intuition distinct from Andronicus', I shall introduce a new label and I shall call the third sense of 'logical' 'Zeno's sense'. In so doing, I rely on the common, if not altogether accurate, view that portrays Zeno of Citium as the first Ancient philosopher to treat logic as a science with substantive philosophical doctrines and as an integral part, rather than a mere instrument, of philosophy.[8]

The most significant text where Averroes lays out Zeno's account is probably the following passage that we find in the *Long Commentary* on *Met*. VII, 1 (1028^{a}15–18):

> You must know that this proof is a logical proof (*dalīl manṭiqī*) and that the majority of demonstrations in this science [i.e. metaphysics] are logical demonstrations (*barāhīn manṭiqiyya*). By 'logical' I mean here [demonstrations constituted by] premises that are taken from the discipline of logic. For the discipline of logic is employed in two ways: [1] it can be employed in other sciences as an instrument and a canon; or [2] what has become clear in it can be employed in another science in the same way in which what becomes clear in one theoretical science is employed in another. Now, when logical premises are employed in this science, they approximate appropriate premises (*al-muqaddimāt al-munāsiba*), because this discipline [i.e. metaphysics] studies absolute being (*al-mawjūd al-muṭlaq*), and it is for absolute being that logical premises, such as definitions, descriptions and so on, are laid down.[9]

---

[8] Diogenes Laertius credits Zeno with the division of philosophy into physics, ethics and logic. See 7.39–41 (Diogenes Laertius 1999, 469–470). The same view is maintained in the Late Antique commentary tradition, as is shown by Ammonius 1899, 8: 20–22. The division was probably introduced by Xenocrates and became quite standard in Later Academy.

[9] Averroes 1938–48, II, 749:1–9. Cf. Averroes 1562–74c, f. 153^{vb}: 'Et sciendum est quod ista declaratio est logica. Et plures demonstrationes in hac scientia sunt logicae, scilicet quoniam propositiones eius sunt acceptae a dialectica. Dialectica enim

Averroes distinguishes between two ways in which logic can be used in metaphysics and in the other philosophical disciplines. In one sense, which I have called Andronicus' sense, logic is considered as a mere instrument that guarantees the validity of inferences and the rigorous articulation of knowledge. In this sense, logic is like a 'canon' (*qānūn*) that 'regulates' the argumentative structure of philosophical discourse. In another sense, which I have called Zeno's sense, logic is regarded as a substantial part of philosophy, where some positive doctrines are established and made available for further investigations. In this sense, logic does not merely 'regulate' but even 'constitutes' philosophy as the specific body of doctrines that it is. Those familiar with Latin Scholasticism will recognise in these formulae something of the traditional distinction between a *logica docens* and a *logica utens*, where the former is 'logic' taken as a science, while the latter is 'logic' taken as an instrument at the service of science. However, according to the traditional division and contrary to what is the case in Averroes, both *logica docens* and *logica utens* focus not so much on positive doctrines as on formal procedures regardless of whether these latter are 'taught' systematically by logic (*qua docens*) or, rather, 'employed' by logic (*qua utens*) in the context of some other sciences.[10]

The distinction between different conceptions of logic is asserted by Averroes in a number of texts. In his *Epitome* of the *Metaphysics* (II, 5), Averroes contrasts the 'constitutive' status of logic as a science with its 'regulative' function as an instrument of science, and remarks that the teachings of logic can be used either as an instrument (*āla*), a vehicle (*sayyāra*) and a canon (*qānūn*) that guides the mind and safeguards it from error, or as a demonstrative discipline (*ṣināʿa burhāniyya*) on whose results the other sciences can rely as their assumptions (*muṣādara*)[11] and fundamental principles (*aṣl*). Along the same lines we read in the *Long Commentary* on the *Physics* that logic is employed in the other sciences either as an instrument that helps

usitatur duobus modis. Uno modo secundum quod est instrumentum: et sic usitatur in scientiis aliis. Et alio modo ut accipitur illud quod declaratum est in illa in aliis scientiis secundum quod accipitur, et secundum quod accipitur illud quod declaratum est in aliqua scientia speculativa ad aliam scientiam, et cum ista consyderat de ente simpliciter. Et propositiones dialecticae sunt entis simpliciter, sicut definitiones et descriptiones et alia dicta in eis'.

[10] See Aquinas, *Commentary on Metaphysics*, Lib. IV, lec. 4, nn. 576–577 (Aquinas 1950, 161).

[11] For this sense of *muṣādara* in the philosophical lexicon, see Goichon 1938, 177.

one to separate truth from falsehood (*instrumentum distinguens verum a falso*) or in so far as that which is established in logic is employed in other sciences to argue in favour or against a given position (*illa quae sunt declarata in ea accipiuntur pro maximis in destruendo aut construendo aliquid*).[12]

Finally, in a passage from the commentary on the *Physics*, Averroes recapitulates his teaching and sets forth what appears to be his most complete and systematic account of the meanings of 'logical' and of 'logic'. In one sense, that is Simplicius' sense, logic is an intellectual training that prepares one for the different branches of philosophy. In this conception, 'logical' arguments are those which lead to basic truths and transcend in generality the peculiar principles of any determinate science (*demonstrationes quae componuntur ex accidentibus communibus pluribus in una arte*). In another sense, that is Zeno's sense, logic is taken as a full-fledged discipline that is endowed with substantive contents and a set of established doctrines. In this sense, logic supplies to the other sciences some positive starting points, on which the latter can rely for their articulations and their specific inquiries (*quasi fundamentis positis eo modo secundum quem aliqua ars utitur eis quae declarata sunt in alia*). Finally, in Andronicus' sense, logic is an inquiry into philosophically neutral issues, such as the nature and the range of valid argumentative schemes or of correct procedures for reasoning and disputation. In this sense, logic is regarded as an instrument of philosophy (*secundum instrumentum*) and a repository of argumentative techniques available to every rigorous philosophical discipline.[13]

Logic and Metaphysics Have the Same Subject-Matter

We have considered, thus far, one important claim that is contained in the text quoted above from Averroes' *Long Commentary* on *Met.* VII, 1. In the same text, however, we also find another crucial remark which is directly relevant to the present inquiry. Averroes observes that the premises of logic can be considered to be appropriate (*munāsiba*) to metaphysics on account of the fact that logic and metaphysics share the same subject-matter, that is absolute being (*al-mawjūd al-muṭlaq*).

---

[12] Averroes 1562–74a, f. 23ra. The Arabic text of the *Long Commentary* on the *Physics* is not extant.

[13] Ibid., f. 414^{vb}.

What is outlined here is the basic epistemology involved in Zeno's conception of logic. Within this conception it is possible for the teachings of logic to be assumed as the starting points of metaphysics; and since metaphysics is, to Averroes' mind, a truly demonstrative science, the starting points that are taken from logic must be truly demonstrative premises.

The theory of demonstration that Aristotle lays out in *Posterior Analytics* I, 2 establishes that demonstrative premises have to be 'appropriate' (οἰκεῖος) to the science where they are employed.[14] Consequently, if the teachings of logic are employed as demonstrative premises in metaphysics, then the former must be 'appropriate', in the sense of *Post. Anal.* I, 2, to the metaphysical science itself. The import of this appropriateness requirement is clarified in *Post. Anal.* I, 7 and 9, where Aristotle rejects the possibility of transitions from another genus (μετάβασις ἐξ ἄλλου γένους) in demonstrative chains. Aristotle argues that a given premise is 'appropriate' in the relevant sense only if the subject-matter of the science where the premise is employed is identical, either (i) without qualification or (ii) in some respect, with the subject-matter of the premise.[15] Case (i), identity without qualification, obtains, for example, when the principles of harmonics are taken from within harmonics itself. Case (ii), qualified identity, obtains instead when the principle of harmonics are taken from a science that transcends harmonics in generality, such as, for example, arithmetic.

The same requirement applies to metaphysics. If metaphysics can draw on the assumptions of logic, this means that the subject-matter of logic and the subject-matter of metaphysics are identical either (i) without qualification or (ii) on account of the fact that logic is more general than metaphysics. Case (ii) is excluded, for metaphysics is the

---

[14] *Post. Anal.*, 71^{b}16–72^{a}7. The Arabic term *munāsib* occurs in the anonymous translation of the *Posterior Analytics* read by Averroes, as well as in Averroes' *Long* and *Middle Commentaries* on the same work, to render the Greek οἰκεῖος and indicates the appropriateness requirement of *Post. Anal.* I, 2. See Averroes 1984a, 183 and 189 (for the Arabic translation), and Averroes 1982, II, 374 (for Averroes' *Middle Commentary*).

[15] *Post. Anal.* 75^{b}8–9 and 76^{a}15. It is disputed, in contemporary Aristotelian scholarship, what the exact meaning is of claim (ii) about qualified identity between the subject-matter of a science and the subject-matter of the premises that appear in the science. I hold here to the interpretation by Mignucci 1975, 145–150, according to which the subject-matter of a science is 'qualifiedly identical' with the subject-matter of any more general science of which the former is a specification. This interpretation is questioned by J. Barnes in Aristotle 1994, 136–137.

science of being *qua* being and is, therefore, the most universal science. It remains that (i) the subject-matter of logic is identical without qualification with the subject-matter of metaphysics. This is the view that emerges from the quoted passage from the *Long Commentary* on the *Metaphysics*, where Averroes assumes that the premises of logic are appropriate to metaphysics because both logic and metaphysics are a study of absolute being.[16]

At first glance, this presentation seems to be at odds with the standard account that portrays logic as the study of mental being and contrasts it with metaphysics as the science of being without qualification. The idea, however, is not alien to Aristotle himself. In *Met*. IV, 2, Aristotle observes that metaphysics, being the most general science, must analyse the most general notions, such as the notions of 'identical' and of 'similar'. In support of this claim he gives the examples of some branches of logic, such as dialectic and sophistry, that are assumed to share the same subject-matter (τὸ αὐτὸ γένος) of metaphysics and which, as a matter of fact, deal with these general notions.[17]

The idea that logic, or at least some of its branches, are concerned with the same subject-matter of metaphysics passes naturally into Averroes' commentary. Discussing the passage in *Met*. IV, 2, Averroes makes clear that dialectic and metaphysics have in common the study of absolute being (*al-mawjūd al-muṭlaq*).[18] What is more, Averroes places an emphasis on absolute being as the subject-matter of logic which goes beyond the letter of Aristotle. Dialectic is described as the study of absolute being, for example, in Averroes' commentary on the fifth aporia of *Met*. III, 1 ($995^{b}18$–27), corresponding in content to *Met*. IV, 2. In Book Beta Aristotle inquires into the question of whether or not the study of general notions is proper to only one science, and Averroes is reminded of the analogous discussion in *Met*. IV, 2. He

[16] In other contexts Averroes expresses himself rather differently and claims that logic is concerned with what he calls 'defective being' (*al-huwiyya al-nāqiṣa*) in contrast to the perfect being that exists outside the soul (*al-huwiyya al-tāmma wa-hiya al-mawjūda khārija l-nafs*). See e.g. Averroes 1938–48, II, 742, 11–743, 3 and ibid., III, 1401, 2–1403, 10. In so doing, Averroes echoes a claim by Aristotle that is found, for example, in *Met*. VI 4, $1027^{b}27$–$1028^{a}4$. On the whole, however, this remains a minor line of thought and, as it appears, Averroes never really appropriates it or makes it a significant part of his view on the subject-matter of logic.

[17] *Met*. IV, 2, $1004^{b}17$–26. Note that the expression 'experts of dialectic' (διαλεκτικοί) is rendered by the Arabic translation as *al-manṭiqiyyūn, manṭiq* referring not merely to 'dialectic' but to 'logic' in general (Averroes 1938–48, I, 325, 6–7).

[18] Averroes 1938–48, I, 329, 7–9.

remarks that two sciences, dialectic and metaphysics, are entrusted with the analysis of general notions, because both metaphysics and dialectic have absolute being as their subject-matter.[19] Averroes reasserts this same position in his preface to *Met*. Beta, where he comments on the place and function of Book Beta within the *Metaphysics*. He observes that, generally speaking, the custom of Aristotle is to mention the dialectical arguments in connection with the corresponding philosophical inquiries. But, as he notes, this is not the way in which Aristotle proceeds in the *Metaphysics.* Here the dialectical arguments are all gathered together in a single book, Book Beta, and the reason for this arrangement is because Aristotle wants to avoid any possible confusion between dialectical and metaphysical claims. As Averroes repeats, dialectic and metaphysics are likewise concerned with absolute being and, therefore, what is argued in a dialectical manner could easily be mistaken for a conclusive metaphysical doctrine.[20]

Absolute Being is Substantial Form

We have seen that logic shares with metaphysics the study of what Averroes calls 'absolute being', and we need now to specify what 'absolute being' (*al-mawjūd al-muṭlaq*) is. In Aristotle the analogous expression 'being without qualification' (ὄν ἁπλῶς) often occurs with a negative meaning to indicate an abstract consideration of being, that is a consideration which leaves aside the peculiar and differentiating features of the different kinds of existents. Such a view is somewhat different from Averroes'. For Averroes 'absolute being' indicates primarily the most positive and most basic meaning of 'being', that is substance. Now 'substance' is itself an homonymous term, since it can indicate either matter, or form, or the whole compound of matter and form. The inquiry beginning with *Met*. Zeta shows that it is possible to arrange the multiple senses of substance according to a certain order of priority and posteriority where form is the primary and the most fundamental among the senses of substance. As Aristotle points out,

[19] Averroes 1938–48, I, 178:7–12. French trans. in Averroes 2002, 198.

[20] Averroes 1938–48, I, 166:12–167:15, French trans. in Averroes 2002, 187–188. See also Averroes 1562–74a, f. 9^{vb}, where dialectic appears as somehow indistinguishable from metaphysics, to the point that it is said to be a question of minor importance whether the universal science that deals with the principles of particular sciences is called '*prima philosophia*' or '*ars disputandi*'.

form is in fact the 'primary substance', a claim to which Averroes subscribes promptly in his commentary on *Met*. VII, 2: 'Aristotle said that form is the primary substance precisely because it is the cause of the ostensible substance and the ostensible substances come to be such by virtue of form.'[21]

There is no doubt for Averroes that 'substance' means primarily 'form', just as 'being' means primarily 'substance'. Nor is there any doubt that, on these premises, 'being' itself is primarily form. In fact, the equivalence between being, or absolute being, and substantial form is what Averroes points to, for example, in his commentary on *Met*. XII, where he states quite emphatically that God himself, being pure form, is 'being *qua* being in an absolute way' (*al-mawjūd bi-mā huwa mawjūd bi-iṭlāq*).[22]

This reconstruction poses a problem, however. Even if we grant that the subject-matter of logic is absolute being and that absolute being is ultimately substantial form, we cannot, at first sight, also accept the ensuing conclusion that substantial form is the subject-matter of logic. For we usually think of logic as the study of mental concepts, rather than of substantial forms; or, to put the matter in more technical terms, we usually think of logic as the study of 'second intentions', such as the notions of genus and species. After all, this is the view that Averroes himself occasionally endorses where he affirms, for example, that 'logical' notions are the 'second intelligibles' (*al-maʿqūlāt al-thawānī*).[23]

---

[21] Averroes 1938–48, II, 761:16–17.

[22] Averroes 1938–48, III, 1708:1–3. I do not agree with Genequand's translation: 'Likewise, the First (praise to Him!) is He who knows absolutely the nature of being *qua* being, which is His essence', in Genequand 1986, p. 197. I find preferable Martin's rendering: 'De même, le <principe> premier, c'est-à-dire Dieu, connaît la nature de l'être en tant qu'être absolu, à savoir Lui-même', in Martin 1984, 269. The Latin translation does not quite match the Arabic text as given in Bouyges's edition: 'Et similiter primus scit natura unitatis in eo quod est ens simpliciter, quod est ipsum.' Averroes 1938–48, VIII, f. 337ra. The identity between God and absolute being is alluded to also in another passage from the commentary on *Met*. VII, 3, where Averroes observes: 'It is beginning with these things [i.e. the sensible things] that one comes to know the perfect being (*al-huwiyya al-tāmma*).' Averroes 1938–48, II, 784:5–6.

[23] 'The name 'existents' is said of first and of second intelligibles, that is the logical entities (*al-umūr al-manṭiqiyya*).' Averroes 1938–48, I, 306:16–17. On the correspondence between second intelligibles and second intentions, see Gyekye 1971.

The attempt to reconcile Averroes' view with the traditional account of logic has misled some authoritative scholars. In his study on the metaphysics of Thomas Aquinas, for example, J.C. Doig convincingly reconstructs Averroes' view that logic is about forms, or about existents, but he wrongly maintains that this view is not in opposition to the standard conception of logic as the study of mental concepts.[24] On Doig's reconstruction, in fact, mental being is itself about forms, because it is their mental representation. And so, if logic is about mental being, it must also be about forms, for the reason that forms are what mental being itself is about. This can explain, according to Doig, why Averroes is in a position consistently to maintain that logic is concerned with mental being: for this very claim is implied in the idea that logic is about absolute being or, which is the same, about forms. If logic is about forms, it is because logic is precisely about mental being and because mental being is, in some sense, about forms themselves.

Doig's solution is not particularly convincing. In Aristotelian terms, the subject-matter of a science is what that science is about (*Post. Anal.* I, 10); if Averroes really intended to claim that mental being, as opposed to forms, is the subject-matter of logic, he would have no alternative but say that mental being, not forms, is what logic is about. When it comes to the subject-matter of a science, the 'about'-relation is not transitive, because what the subject-matter itself is about is not relevant to the way in which it is defined *qua* subject-matter of a science. Consequently it is not enough to maintain, as Doig does, that mental being is about forms to account for, and explain away, Averroes' claim that the subject-matter of logic is forms. The explanation of this claim must be found elsewhere and what needs to be taken into consideration here is another, more fundamental, doctrine of Averroes', a doctrine that lies at the core of his overall metaphysical thought. I shall deal with this doctrine in the following section, where I focus on Averroes' view on the real identity between form and species.

The Doctrine of Real Identity Between Form and Species

In the *Long Commentary* on the *Metaphysics*, Averroes maintains that form and species are really identical and logically distinct. Probably the

[24] See Doig 1972, 39–46.

clearest characterisation of this doctrine is given by Thomas Aquinas in his commentary on the *Metaphysics*. Aquinas reports Averroes' view that substantial form, e.g. the human soul, and species, e.g. 'humanity', are identical *secundum rem* and distinct *secundum rationem*. His assumption seems to be that what exists in reality is numerically one entity, which can be logically considered either as 'form' or as 'species'. In the first case, the same entity will be considered in the light of its metaphysical function, in so far as it perfects matter and brings it from potentiality to actuality. In the second case, it will be considered in the light of its epistemic function, in so far as it makes it possible to place an object under a natural kind.[25]

Another way to frame this same distinction is by positing that an entity, while being really one and the same, exists in different ways in the outside world and in the soul. Thus, when we consider it as something existing in the outside world, we properly speak of 'form'; when, instead, we regard it as existing in the soul, we refer to it as a 'species'. However, there is no multiplication of entities that corresponds in reality to this conceptual distinction. Contrary to what Aquinas maintains, for example, for Averroes all that is found in a given form is also found in the corresponding species and, conversely, all that is found in a species is in the corresponding form. Aquinas believes that the species of man includes his (common) matter as well as his form. For Averroes, by contrast, the species of man is the same as his form, even though it is made the object of a different consideration. Indeed, were it not for our different considerations of things – which are grounded on the different ways in which things themselves exist – there would be no ways at all, according to Averroes, to differentiate between what we term 'species' and 'form'.

The thesis of the real identity between form and species is, to my knowledge, never formulated by Averroes in an explicit way. And yet, we find in Averroes a number of texts where the essential features

[25] 'Quidam enim dicunt quod tota essentia speciei est ipsa forma, sicut quod tota essentia hominis est anima. Et propter hoc dicunt quod eadem secundum rem est forma totius, quae significatur nomine humanitatis, et forma partis, quae significatur nomine animae, sed differunt solum secundum rationem: nam forma partis dicitur secundum quod perficit materiam et facit eam esse in actu; forma autem totius, secundum quod totum compositum per eam in specie collocatur…Et haec opinio videtur Averrois et quorundam sequentium eum.' Lib. VII, lec. 9, n. 1467 (Thomas Aquinas 1950, 358). For a discussion of this text in relation to Averroes' position, I take the liberty of referring to Di Giovanni 2003, 56–63.

of species are equally referred to form. Species is a mental concept that is predicable of many subjects (e.g. 'rational animal') and is, *qua* predicable, a universal. *Qua* universal, then, species is a possible object of definition, whereas nothing can be defined as a particular. Finally, species is a notion composed of at least two predicates, that is a genus (e.g. 'animal') and the last differentia (e.g. 'rational'). Throughout his *Long Commentary* on the *Metaphysics*, Averroes describes substantial form as having precisely these three features. Form is said to be a compound of genus and a last differentia, which correspond to what Averroes calls 'generic form' (*al-ṣūra al-ʿāmma*) and 'specific form' (*al-ṣūra al-khāṣṣa*).[26] Likewise, things that are one in definition are one in form (*ṣūra*).[27] Finally, form is not only an object of definition but also a predicable entity, and its being predicable is the fundamental difference between form and matter in composite substances.[28]

It is rather difficult to indicate the possible sources of this doctrine. A major role may have been played by a famous passage in *De Anima* III, 4, on which Averroes seems to draw also for the foundation of his own cosmology.[29] In *De Anima* III, 4 Aristotle states that, as long as one makes abstraction of the different pieces of matter where each is found, the object and the subject of thought are the very same entity. Averroes takes this to mean that substantial form, on the side of what is known, and species, on the side of the knower, are really identical. In Averroes' view, the only way to distinguish between form and species is by making each of them the object of a different consideration, either in so far as it exists in the extramental world (in which case we will speak of 'form' as opposed to 'species') or in so far as it exists

[26] 'Definition is of the universal entity and of the form, that is of the generic form and the specific one; it is not of the entity compounded of matter and form, as has become clear in the Book of Demonstration.' Averroes 1938–48, II, 919:15–18; 'There is no difference in his opinion between a genus and a differentia, except that a genus is, in his opinion, a generic form and a differentia is a specific form.' Ibid., 953:13–14.

[27] See *Met*. 1016^{b}33 and Averroes' commentary ad loc. in Averroes 1938–48, II, 549:1–4.

[28] Averroes 1938–48, II, 897:15–19.

[29] 'In the case of those things which have no matter, that which thinks and that which is thought are the same.' *De an*. 430^{a}3–6, Eng. trans. in Hamlyn 1968, 59. On the significance of this text for Averroes' cosmology, see Di Giovanni 2006, 458–459. The same view, according to which form is really the same as species, is also alluded to in other texts of Aristotle, where the technical knowledge of a thing, that is the notion of the thing in the mind, is said to be really identical with the form of the thing. See e.g. *Met*. 1032^{a}32, ^{b}11; 1034^{a}24; 1070^{a}15; 1070^{b}33.

in the soul (in which case we will speak of 'species' as opposed to 'form').

Absolute Being as the Subject-Matter of Logic and of Metaphysics

The issue of the textual sources of Averroes' doctrine is less relevant to our present concern than are its theoretical implications for Averroes' overall conception of logic and of its relation to metaphysics. In fact, it is this doctrine of real identity between species and form that can provide an answer to our original question: What is, for Averroes, the subject-matter of logic? We have seen, so far, that form is to extramental being what species is to mental being. Form is a metaphysical principle for what exists in the outside world and species is the most distinct idea that we can entertain in our minds from which all other, more general, ideas ultimately depend for their mental existence. In this sense, real identity and logical distinction between form and species come down to real identity and logical distinction between extramental and mental being, i.e., between the subject-matter of metaphysics, on one side, and the subject-matter of logic, on the other.

Logic is the study of forms in so far as they exist in the soul and are subject to certain mental operations. For Averroes, consequently, the subject-matter of logic is forms as 'species' and the properties that forms enjoy in so far as they exist in the mind, such as the properties of being combined or divided in predication, in conceptualisation and in syllogistic reasoning. Metaphysics is, by contrast, the study of forms in so far as they exist in the extramental world, and so the main concern of metaphysics is the extramental properties of forms, such as their existing with a certain degree of being and perfection, as actual or potential entities, as substances or accidents.

Logic and metaphysics, then, investigate the same subject-matter from different perspectives. In his *Long Commentary* on *Met*. VII, 12, Averroes specifies in what sense it is possible to say that the study of definitions belongs to the expert of metaphysics as well as to the expert of logic. He observes that 'the study of definitions is shared by both the expert of metaphysics and the expert of logic, but from different perspectives (*lākin min jihatayn mukhtalifatayn*)'. For the expert of logic considers definitions as instruments that guide the mind to the representation of the quiddities of things, whereas the expert of this science [i.e. metaphysics] considers them in so far as they point to the

natures of things (*ṭabāʾiʿ al-ashyāʾ*)'.[30] A similar remark can be found in Averroes' commentary on the opening section of *Met*. VIII, 1, where Aristotle recapitulates the main results of Book Zeta and alludes to the analysis of definition therein.[31] According to Averroes, Aristotle's purpose in this text is to clarify on what conditions it is possible for metaphysics to analyse the same notions that logic also deals with such as, for example, the notion of definition. This happens, for Averroes, because logic and metaphysics adopt different points of view and examine the same issues from different epistemic perspectives. Contrary to logic, metaphysics studies definitions to the extent that they refer to actual substances, and the inquiry into definitions is a 'metaphysical' inquiry inasmuch as it is concerned with the extramental beings captured by definition, rather than with definition as a mental notion.

The view according to which logic and metaphysics are distinct from one another on account of their different perspectives is so essential to Averroes' epistemology that the Commentator even engages on this point in a dispute with al-Fārābī, the acknowledged Master of Arabic logic. The matter of contention is laid out in Averroes' elaborate introduction to his *Long Commentary* on Aristotle's *Posterior Analytics*, where al-Fārābī is said to conceive of logic as a discipline that inquires into every aspect of mental beings, including their extramental mode of existence. Averroes objects that the only aspect of mental beings that logic considers is their capacity for guiding the mind to perfect certitude and perfect assent, whereas – as he implies – their extramental existence as substantial forms is examined in metaphysics.[32]

---

[30] Averroes 1938–48, II, 943:13–944:2.

[31] 'Since we have posited that the study of the substance that is form begins with [the study of] definition, and since definition has parts, for it is a composite formula, the study has touched on [the question of] which parts of definition are substance and which are not. In this section, [Aristotle] intends precisely to mention what has become clear with regard to substance, as well as the reason for what he says about definitions and their parts, so that nobody may think that the discussion of this pertains [only] to the discipline of logic.' Averroes 1938–48, II, 1026, 16–1027, 3.

[32] 'The ultimate differentiae into which the kinds of demonstration are divided on account of their matters are the differentiae that exist in demonstrations in so far as they make known something else and are useful for the production of the assent to it, not the differentiae that belong to them in so far as they are one of the existents, as we find that Abū Naṣr [al-Fārābī] claimed in his book'; '[Here Aristotle] does not study them [i.e. demonstrative premises] in so far as they are one of the existents, but only in so far as they lead man to perfect certitude and perfect conceptualisation'; 'Also, [Aristotle] does not consider definitions in so far as they are one of the existents but, rather, he consider them only in so far as they give the perfect conceptualisation in accordance with the nature of every existent.' Averroes 1984a, 158–159.

In this way the relationship between mental and extramental being is reflected in the relationship between logic and metaphysics: mental and extramental being are really the same, although they differ in logical consideration. Likewise, both logic and metaphysics are about absolute being, even though logic focuses precisely on being as 'species' and analyses its mental properties, whereas metaphysics focuses on being as 'form' and inquires into its extramental properties.[33]

Doig is right in maintaining that there is a connection in Averroes between the idea that logic is about mental concepts and the idea that it is, somehow, about being. However, the way in which this connection is established is not what Doig takes it to be. Logic is not about absolute being simply because absolute being is what mental being itself is about. Rather, logic is about absolute being because absolute being and mental being are, in reality, identical. They are really identical and logically distinct. Real identity accounts for the fundamental unity of logic and metaphysics, whereas logical distinction explains their distinctness and autonomy within the Aristotelian system of sciences.

Conclusion

In order to better appreciate the specificity of Averroes' view, it may be of some help to contrast it with the analogous, and better known, account by Thomas Aquinas. I must confine myself to some general remarks but it is important to bring out, at least, one major source of disagreement between the two medieval Aristotelians.[34] Like Averroes, Aquinas maintains that there is a special similarity (*affinitas*) between logic and metaphysics; however, the way in which this similarity is

[33] If my reconstruction is correct, then there is a close parallel, in Averroes, between the relation of metaphysics to logic, on one side, and to physics, on the other. Like logic, physics inquires into the same issues that are considered in metaphysics but from a different point of view. Metaphysics considers form, matter and the Prime Mover as principles of being, whereas physics considers them as principles of movement. This is the view that emerges, for example, in Averroes 1938–48, II, 779:13–781:3.

[34] For the following reconstruction I mainly rely on Aquinas' commentary on the *Metaphysics* and, in particular, on Lib. IV, lec. 4, n. 573–577, (Thomas Aquinas 1950, 160–161); Lib. V, lec. 9, n. 896 (Thomas Aquinas 1950, 239); Lib. VI, lec. 4, n. 1243 (Thomas Aquinas 1950, 311); Lib. VII, lec. 3, n. 1308 (Thomas Aquinas 1950, 327); Lib. VII, lec. 13, n. 1576 (Thomas Aquinas 1950, 379); Lib. VII, lec. 17, n. 1658 (Thomas Aquinas 1950, 396).

accounted for by Averroes and Aquinas is remarkably different. Contrary to Averroes, Aquinas maintains that similarity means not 'identity' but, rather, 'analogy' (*aequiparatio*) between the subject-matter of the two disciplines. In his view, the subject-matter of logic is somehow similar to, and somehow different from, the subject-matter of metaphysics. It is similar in so far as both subject-matters embrace the totality of what exists (*ad omnia se extendit*) and are universal in scope (*propter utriusque communitatem*); but, contrary to Averroes, Aquinas believes that the subject-matter of logic is literally 'other' than that of metaphysics. Metaphysics inquires into extramental being, whereas logic inquires into mental being, and mental and extramental being differ from one another on account of their specific modes of existence. In fact, while extramental being exists *per se*, mental being is more similar to accidental being. Extramental being is divided into ten categories, or *summa genera*, which are the main divisions of being *per se*, according to Aristotle. Mental being, by contrast, depends for its existence on the outside world, and thus it shares something of accidental being, which exists not by virtue of itself but by virtue of something else. For Aquinas, contrary to Averroes, the distinction between logic and metaphysics cannot be reduced to a distinction between different epistemic perspectives on the same subject-matter, because logic and metaphysics do, in fact, have different subject-matters (*subiecta*). These are equal in scope (*materia*), indeed; but, for Aquinas, only metaphysics studies absolute being (*ens simpliciter per se quod est in rebus*), whereas logic, just as all particular sciences, concentrates on a particular aspect of being (*aliquod genus entium*).

This comparison with Thomas Aquinas allows us to fully appreciate the distinctive features of Averroes' view and leads us, in the end, to a few concluding remarks about its significance and philosophical import. We have considered some of Aristotle's texts which pose a distinct exegetical problem and we have analysed the solution that Averroes provides. Occasionally, Aristotle portrays his inquiries as proceeding in accordance with what he calls a 'logical' method, and Averroes takes this to mean that the metaphysical science can borrow some of its premises from the science of logic. This interpretation relies on the assumption that logic and metaphysics have the same subject-matter, absolute being, so that it becomes legitimate for metaphysics, in light of Aristotle's theory of demonstration, to incorporate the teachings of logic.

The claim that logic and metaphysics share the same subject-matter, however, has a double connotation for Averroes. On the one hand, it represents the rationale for the possibility of integrating the doctrines of logic into the metaphysical science; on the other hand, it is the result of another, more basic, assumption to the effect that mental and extramental being, just as species and form, are really identical and logically distinct. Just as mental and extramental being differ in logical consideration, so logic and metaphysics are different considerations of the very same subject, absolute being: just as metaphysics considers absolute being in its objective and extramental mode of existence, so logic considers it in its mental existence.

Averroes' conception of the relationship between logic and metaphysics is, as we have seen, the theoretical underpinning of a specific exegetical option, that is the option to interpret the logical sections in Aristotle in accordance with what we have called Zeno's account of logic. However, this is not the only aspect where Averroes' view reveals its philosophical potential. Thanks to his conception of logic and metaphysics, in fact, Averroes is in a position to deal with a number of difficult issues that are involved in Aristotle's theory of demonstration. He is in a position to explain, for example, how it can be the case that the laws of non-contradiction or of the excluded middle are at once both logical and metaphysical principles. For he can maintain that these are numerically the same formal principles, which exist and operate in different ways in the mind and in the natural world.

Moreover, Averroes can thus negotiate his way out of another difficulty that is involved Aristotle's account of demonstrative science. In *Post. Anal.* I, 10, Aristotle maintains that common axioms can figure as appropriate premises in demonstrative chains. A well-known problem posed by this idea is that common axioms are very general in scope, so that it would seem more natural to take them as basic, that is, pre-syllogistic, principles rather than as appropriate premises of demonstrative chains.[35] For his part, Averroes believes that logic and metaphysics are about absolute being. On his view, the common axioms themselves, being simultaneously both logical and metaphysical

[35] Common axioms are presented as syllogistic starting points, for example, in *Post. Anal.* 76^{a}41–42; 77^{a}10–35. The view that common axioms should be rather taken as non-syllogistic laws of thought is defended by Ross 1949, 56. For a discussion of the further difficulties posed by the view of axioms as syllogistic principles, see Ferejohn 1991, 145, n. 43.

laws, are about absolute being. Now, all particular sciences deal with some specifications of absolute being in such a way that absolute being is a quasi-genus for them. Absolute being, thus, embraces the different domains of particular sciences in just the same way as common axioms do. Common axioms apply to absolute being and precisely for this reason they can apply to the particular sciences. This represents, for Averroes, a possible explanation of why common axioms can figure as appropriate premises in demonstrative chains: for common axioms are about absolute being, which is the quasi-genus of all particular sciences. In this way common axioms are relevant to all scientific fields that deal with some aspect of being and, therefore, to all particular sciences.[36]

This view of absolute being as a sort of genus for the particular sciences is somewhat at odds with Aristotle's explicit teaching that being is not a genus.[37] However, Averroes' conception of common axioms as

[36] Occasionally, Averroes seems to assume that common axioms are not really 'appropriate' to the particular sciences where they are employed. See e.g. Averroes 1562–74a, f. 23ra: 'Logica usitatur in scientiis…secundum quod illa quae sunt declarata in ea accipiuntur pro maximis in destruendo aut construendo aliquid. Et ista consyderatio, cum usitatur in artibus particularibus, est *non propria*, in arte autem universali, scilicet prima philosophia, est propria.' (emphasis added). Here however Averroes is probably echoing Aristotle's distinction between 'proper' (ἴδιαι) and 'appropriate' (οἰκεῖαι) principles, and his point seems to be that universal principles, or common axioms, are not 'proper' (*proprii*), although they are 'appropriate', to the particular sciences. The distinction between 'appropriate' and 'proper' principles corresponds *grosso modo* to the distinction between principles that are 'appropriate', in the relevant sense, to more than one science and principles that are 'appropriate' to only one science (see McKirakan 1992, 36 and 277, n. 29). In fact, Averroes affirms that the principles of a superior science are 'appropriate' to the subordinate sciences, for example, in his *Long Commentary* on *Post. Anal.* I, 9: what belongs to a superior, more universal science, is appropriate to what belongs to a subordinate, i.e. more specific, science in the same way as the non-physical principles of some physical entity are appropriate to that physical entity. In this same way, for example, the substantial form of material substances is 'appropriate' to matter. See Averroes 1984a, 296.

[37] The possibility of a universal and overarching science seems to presuppose that 'being' can, just like a genus, be posited as a subject-matter for such a science. On such issues, however, Aristotle shows some hesitation. His position is that being is not a genus (*Met*. IV, 2); and yet in the same text from *Met*. IV, 2, Aristotle implies that being is to the ten categories what a genus is to its species (1003^{b}19–22, 33–36). Averroes appropriates this claim in his commentary ad loc.: 'Since [Aristotle] has posited that for any one genus there is one science and one discipline, and it is clear that being is one genus, it necessarily follows that there is one science of being.' Averroes 1938–48, I, 309:13–15. As regards the possibility of a single science embracing all the particular sciences, there are indications in Aristotle of what P. Pellegrin appropriately calls a 'movement of unification', although it remains as a firm tenet of Aristotle's that the particular sciences are, contrary to what Plato maintains, irreducibly distinct

logical and metaphysical principles, and his account of logic and metaphysics as centred on the study of absolute being, make it possible at least to understand, if not quite to explain, how common axioms can be the fundamental 'premises' of sciences. In this regard, as well as for its capacity to account for the special proximity of logic and metaphysics, Averroes' reconstruction represents, within the Aristotelian tradition, an important contribution to the meta-philosophical reflection on the structure and the organisation of the philosophical discourse.

(see Aristotle 2005, 26–28). The 'movement of unification' of sciences is particularly emphasised in the Arabic translation of Aristotle's *Posterior Analytics* available to Averroes. Probably under the influence of Themistius, metaphysics is portrayed as an overarching science with a universal scope that somehow includes all the subfields of philosophy. I thank Prof. Amos Bertolacci for calling my attention to this peculiarity of the Arabic translation, which he points out in Bertolacci 2007, 69–73.

NON EST NATURA SINE PERSONA
THE ISSUE OF UNINSTANTIATED UNIVERSALS FROM LATE ANTIQUITY TO THE EARLY MIDDLE AGES

Christophe Erismann

The admission or rejection of uninstantiated universals is considered today to be one of the criteria according to which Aristotelian and Platonic realist theories of universals are distinguished from one another. Aristotelian theories do not admit separate, uninstantiated universals – that is to say, universals not realised in at least one individual. Platonic theories, by contrast, accept that universal catness exists, even if there exists no individual cat. The divide is between rejecting or accepting that which, following David Armstrong, can be called the *principle of instantiation*. The present paper is an attempt to write a chapter of the long history of this principle, and to formulate some methodological issues about how an historian of philosophy should consider a particular subject: the use of Aristotelian logic in a theological context.

The terms of the alternative between a Platonic and an Aristotelian position about the instantiation of universals were already to be found in Boethius' second commentary to Porphyry:

> Plato thinks that genera, species, etc. are not merely conceived as universals, but exist as such and have being independently of body. Aristotle thinks that they are indeed conceived as immaterial and universal, but that they exist only in sensible things (*subsistere in sensibilibus*).[1]

The issue of the subsistence of species in sensible things is a central question for late ancient and early medieval philosophy. It stretches beyond the field of philosophy into that of theology. Boethius, whose second commentary to Porphyry has just been quoted, also discusses this issue in his theological work *Contra Eutychen et Nestorium*, by mentioning a Greek sentence the origin of which remains unknown: 'essences can indeed exist in universals, but they subsist in individuals and particulars alone' (ἐν δὲ τοῖς ἀτόμοις καὶ κατὰ μέρος μόνοις

[1] Boethius 1906, 167:12–15.

ὑφίστανται; *in solis vero individuis et particularibus substant*).[2] According to Boethius, the subsistence of universal entities requires that they be immanent in particulars. On this point, he agrees with the Aristotelian position stated by Alexander of Aphrodisias: 'For universals and common items have their existence (*hyparxis*) in particulars and enmattered things.'[3]

The thesis of the subsistence of universals in individuals, a crossing-point between ontology and logic, provides an interesting marker according to which we may follow the slow and complex evolution of logical theses. It illustrates the way in which the permeability of borders between fields of knowledge – in this case, between ontology, logic and theology – leads thinkers to adopt a wide understanding of the subject and value of logic and to use it in contexts which seem quite distant from its original field. The complex history of this thesis increases understanding of the Christian attitude toward Aristotelian logic, of what a Christian author from late Antiquity or the early Middle Ages would consider to be the field of application of logical principles and, more generally, of the diversity of the tradition of Aristotelian logic.

Let us begin with one particular medieval occurrence of the thesis of the subsistence of universals in particulars. During the end of the eleventh and the beginning of the twelfth century, Anselm of Canterbury wrote *De conceptu virginali et de originali peccato* and Odo of Cambrai *De peccato originali*. These two texts agree on many doctrinal points. Both authors sought to explain how original sin is transmitted. I have shown elsewhere that these two texts provide an interesting contribution to the early medieval history of the problem of universals and that the solution they provide to this problem reveals a strong realist commitment about universals.[4]

Let us consider two statements made respectively by Anselm and Odo:

> *natura subsistit in personis* [nature subsists in persons];[5]
> *substantia non est nisi in persona* [substance does not exist, except in a person].[6]

---

[2] Boethius 2000, 216: 197–200. Transl. Boethius 1973.
[3] Alexander of Aphrodisias 1892, 90: 4–9.
[4] Erismann 2007 and Erismann in press.
[5] Anselm of Canterbury 1946, 165: 19–21.
[6] Odo of Cambrai, *De peccato originali*, *PL* 160, 1085 BC.

We also find these authors stating the thesis complementary to the previous, according to which *persona non est sine natura* (Odo, *PL* 160, 1085C) or *personae non sunt sine natura* (Anselm, 1946, 165: 19–21). These statements express two Aristotelian theses which were central to the *Categories*: the rejection of separated universals and kind essentialism. In a more explicit formulation, this means that there are no uninstantiated universals – no essences which are not instantiated by at least one individual[7] and therefore completely realised in it. In other words:

> *For each specific universal U, there exists at least one individual x such that x is U.*

The complementary thesis (which is also called *secondary substantialism*) is that every individual belongs to a universal which is a species. In other words:

> *For each individual x, there exists one specific universal, U, such that x is U.*

This paper will focus on the statement according to which *natura subsistit in persona*. An interpretation of this thesis can be based upon

[7] The issue of what the minimum number of instantiations may be is debated. The definition of 'universal' as 'predicable of several' seems to imply that a species has to have at least two members. However, this position is not accepted by everyone, as testified for example by the opinion of Master Vasletus, as it is reported by Abelard in his *Logica 'nostrorum petitioni sociorum'* (Peter Abelard 1933, 545). Vasletus retains the definition of the universal on the basis of predicability, and consequently denies that the phoenix or the sun are universals: 'Et magister Vasletus dicit, quia neque phoenix neque sol nec mundus nec terra sunt species, sed individua eo quod non sunt praedicabilia de pluribus, idest non apta coniungi pluribus ad veram enuntiationem reddendam'. Other positions are also defended: Odo upholds a different definition of universality, which does not depend upon predication, but on the (possible) community of an entity. According to him, a species is a *natura quae potest esse communis*. For Odo, possible community to several individuals is sufficient – this possibility does not need to be realised in order to speak of a specific universal. He gives the example of the phoenix and insists on maintaining in this case the distinction also between nature and individual: 'nam phoenix avis, quamvis individuum non habeat nisi unum, species est, quia communis potest esse multorum, aliud enim est phoenix, aliud haec phoenix. Phoenix est specialis natura, quae potest esse communis […]' (*De peccato originali*, *PL* 160, 1079B). In the case of a monadic species, it is still appropriate to continue to distinguish this given individual – whose individuality is explained by the bundle of accidents it possesses – from the specific universal which provides it with all its substantial being. Because he does not base his definition of the species – that is, the universal – on the criterion of predicability, Odo is entitled to maintain that the phoenix is a universal, even if it only exists in one individual. On this debate, cf. Resnick 1997.

the ontology of the *Categories*: it refers to the Aristotelian thesis according to which nothing can subsist without primary substances, and that therefore secondary substances exist only thanks to primary substances. However, this reading does not account completely for Anselm and Odo's statement, in particular for the specific vocabulary they use (we would have expected to find terms like *substantia, essentia* or *individuum*). Although the origin and field of application of this thesis are easily identifiable (the central theses of the ontology of the *Categories* as a criticism of Plato's theory), the vocabulary which is used here is surprising, as are the works from which these quotations are drawn – discussions on original sin. Although they are originally philosophical terms, *natura* and *persona* do not belong to the exegetical tradition of the *Categories* nor to the discussion on universals as it was initiated by Porphyry. They are theological terms which belong first and foremost to Christological debates (for example, remember that the title under which medieval readers knew the *Contra Eutychen et Nestorium* was *Liber de duabus naturis et una persona Christi*). It therefore seems interesting to understand how an Aristotelian thesis originating in the *Categories* came to be expressed in Christological vocabulary.

There are several previous occurrences similar in meaning to Anselm's and Odo's thesis: besides Boethius' already mentioned texts, this idea is stated several times by John Scottus Eriugena.[8] There is also an occurrence which is identical in wording, and which provides us with more direct access to the long-term history of this thesis. We find it in the context of the sixth-century controversy with the Scythian monks, which Viktor Schurr demonstrated to be the background of Boethius' thoughts on the Trinity in the *Opuscula sacra*.[9] The leader of these Scythian monks was, in the 520s, John (Johannes) Maxentius, who is known to have defended the Theopaschite formula (*unus ex trinitate passus*). On several occasions, both in his *Responsio contra Acephalos* and in his *Dialogus contra Nestorianos* – texts which the manuscript tradition prove to have circulated during the Latin early

[8] John Scottus Eriugena 1996–2003, III, 120: 3489–121: 3501; I, 44: 1295–45: 1305.

[9] See Schurr 1935.

Middle Ages[10] –, Maxentius refers to an argument of his adversaries (usually introduced by *secundum ipsos* or *inquiunt*): 'non est natura sine persona'[11] – there is no nature without a person. This is a clear statement of the ontological dependence of natures on persons. Maxentius soon adds to this thesis its essentialist complement, which states that persons depend on their natures (44: 29–30: 'si 'non est sine persona natura', multo magis persona non potest esse sine natura').

The context of the discussion is that of the Greek theological debates between the supporters[12] and adversaries of the Council of Chalcedon.[13] Maxentius translates into Latin one of the most often cited axioms of the Christological controversies of the sixth century, which appears to have been introduced into the debate by the Nestorians and the Monophysites:

Monophysite axiom (MA): Οὐκ ἔστι φύσις (οὐσία) ἀνυπόστατος
[There is no anhypostasized nature (or essence)]

[10] Although it is difficult to form a precise idea of the medieval circulation of the writings of John Maxentius, it is worth noting that MS Oxford, Bodleian Library Laud. Misc. 580, through which we know them, was copied during the ninth century in Würzburg (Sancti Kyliani Wirceburgensis). The fact that it was copied in one of the biggest *scriptoria* of the early Middle Ages makes probable its circulation in continental Europe during that period. See Bischoff and Hofmann 1952, 37–38 and 130.

[11] John Maxentius, *Responsio contra Acephalos*, in Maxentius 1978, 43: 1–5: 'Exposita breuiter catholicae fidei professione, pergimus nunc illorum respondere definitionibus, qui, lapsu miserabili corruentes, nouis et exquisitis argumentationibus nefarium dogma Christi ecclesiis moliuntur inferre, et 'deum et hominem, uerbum et carnem' confitentes, 'unam, post adunationem, in Christo naturam' stulte nimis imprudenter que conantur astruere: 'quia' inquiunt 'non esse naturam sine persona'; 45: 47–51: 'Si autem duas, ante adunationem, fuisse naturas in Christo dixerint, duas etiam sine dubio, ante adunationem, dicere conuincuntur in Christo fuisse personas, quia (secundum ipsos) 'non est natura sine persona'; 45: 55–57: 'Item, si 'non est natura sine persona', quaeramus ab eis: utrum, 'post adunationem' uerbi et carnis, in Christo dicant duas esse naturas, an denegent'; 45: 65–71: 'Verum, quia 'nolunt esse naturam sine persona', procul dubio etiam sic, secundum hanc stultam et impiam definitionem suam, ipsi potius duas inuenientur in Christo asseuerare personas, quia uerbum et carnem, etiam 'post adunationem', in Christo negare non possunt, quorum diuersas esse naturas nullus ignorat'; and *Dialogus contra Nestorianos*, in Maxentius 1978, 68: 480–485, 68: 495–498, 69: 517–518.

[12] According to Chalcedonian authors, in the case of Christ, two natures, divine and human, are united in one person, in such way that they do not form some new, third sort of thing (a union of the two natures, i.e. a third one like 'Christness', *eidos Christôn* in the words of Leontius of Byzantium (*Contra Nestorianos et Eutychianos*, *PG* 86, 1292A)) but rather are possessed by one and the same person.

[13] A detailed presentation of the Christological controversy is given in Grillmeier and Hainthaler 1995.

The appropriate translation and meaning of this axiom are debated questions. The meaning of *anhypostatos*[14] – like that of the term with which it is correlated, *enhypostatos*[15] – is difficult to determine; these words often hold different shades of meaning according to the author who uses them. Clearly, both terms refer to the mode of being of the nature or *ousia* and cover a semantic field which goes, according to Lampe's *Patristic Greek Lexikon*, in the case of *enhypostatos*, from 'subsistent', 'concretely existing' to 'existing in an hypostasis'; since *anhypostatos* means the contrary of *enhypostatos*, its meaning depends on the meaning given to the first term. To begin with, I will use a fairly neutral translation:

There is no such thing as a nature (essence) that is not hypostasized.

We can also refer to the translation of G.C. Stead 1994, 199: 'Every *physis* must have its *hypostasis*.' Other versions of the axiom are frequently found, in which *aprosôpos* (ἀπρόσωπος) is used instead of *anhypostatos*. This point is important, because it solves in part the translation problem: it allows us to set aside the meaning of 'inexistent' (which is completely absent from the semantic field of *aprosôpos*), leaving us with the meaning of 'without an hypostasis or a person' or 'not realised in an hypostasis or in a person.' In the case of both words – *anhypostatos* and *aprosôpos* – the issue is that of the relation between a nature or substance on the one hand, and a hypostasis or person on the other.

The fact that the discussion centres around an axiom (MA) requires a more general comment on the practice of theological discussion after Chalcedon: a new style of Christian reflection and controversy seems to have begun in the Greek East in the mid-fifth century, more centred on argument than on commentary. As noted by Daley 1984, 172: 'Christian theologians of the age after Chalcedon were really the first to develop the systematic argument from non-scriptural authority.' This may be contrasted with earlier theological practice, and also with the habits of the Neoplatonic school of Alexandria, which developed philosophy in an exegetical perspective, that of philosophy through

[14] For useful remarks on the meaning of *anhypostatos*, see Schlossmann 1906, 73–87.

[15] The discussion on this term was initiated by Loofs 1887. For critical discussions of his reading, see Junglas 1908, Otto 1968, Daley 1993, LeRon Schults 1996, Lang 1998, Gockel 2000, Cross 2002a and dell'Osso 2003.

commentary. This taste for argument came with a growing interest in Aristotelianism. With the important exception of Pseudo-Dionysius, who was deeply influenced by the Platonism of Proclus, all the prominent Greek theologians from the sixth century whose works survive took a new approach to doctrinal exposition and controversy based on logical tools, which mostly originated in Aristotelian logic as represented by Ammonius and his followers. The positive reception of MA by all sides involved in the dispute was prepared by a climate favourable to Aristotelianism in which contestants were happy to work with non-scriptural arguments.

This argument appears to have been used by the Monophysites[16] (or Miaphysites) – a group of late ancient theologians about which it has often been remarked that they were particularly receptive to Aristotelian philosophy – in their argument against the Chalcedonian formula which states the two natures of Christ. Among others, Leontius of Byzantium transmits the argument of his monophysite adversaries: 'If you posit two natures of the one Christ, but as there is no nature without hypostasis, then there will be two hypostases too.'[17] This argument, which I will call the Christological syllogism, is a *reductio ad absurdum*, which relies on MA. It aims at equating dyophysism with Nestorianism:

1. Jesus Christ has two natures;
2. There is no nature without hypostasis;
3. Jesus Christ has two hypostases.

According to the Monophysites, 3 is a logical consequence of 1 and 2. However, 3 is an unacceptable, Nestorian, conclusion. Therefore Monophysites conclude that 1 is false. Perhaps surprisingly, the strategy of the Chalcedonians is not to attack 2, but to demonstrate that 3 is not the correct consequence of 1 and 2. Interestingly, 2 is accepted by the Chalcedonians as being a valid argument and becomes a widely accepted traditional argument in Christological discussions. This point is interesting, because the ontological orientation of Monophysites and Chalcedonians is different, as can be seen from their disagreement on the meaning of *physis* (understood on the one hand as being identical to hypostasis and therefore a particular entity, and on the other as

[16] For a description of monophysite Christology, see Lebon 1951.
[17] Leontius of Byzantium, *Contra Nestorianos et Eutychianos, PG* 86, 1276D.

being identical to *ousia* and therefore a universal entity). Monophysites are generally supporters of particularism, as testified by their clear statement of the synonymy of the terms 'nature' (*physis*), 'hypostasis' and 'person'. Since 'hypostasis' necessarily refers to a particular entity, stating this synonymy means holding that any nature is necessarily particular. Among the clearest examples of this particularist commitment are, in the fifth century, Philoxenus of Mabbug, according to whom the particular nature of an individual is identical to its hypostasis and Severus of Antioch, who consistently identifies *physis* with *hypostasis*; this position was later forcefully upheld by John Philoponus, who extended it to Trinitarian speculation. The tendency among Chalcedonians is to admit the Cappadocian distinction between *ousia* and *hypostasis* understood as analogous to the distinction between that which is common and that which is particular. More importantly, following the insight of Cyril of Alexandria, the Chalcedonians accept in Christology the relevance of the Cappadocian understanding of the Trinity, in which the divine substance is an immanent universal.[18] The Cappadocian solution can be applied to Christology simply by understanding the Christological term *physis* as 'essence' (*ousia*). In the Cappadocian approach, there is the realist assumption, which grounds a philosophical analysis of the sensible world, that *ousia* is universal. If *physis* is understood as synonymous with *ousia*, it entails that *physis* is universal too, and this leaves us with a distinction between common – and universal – entities, essences or natures, and particular entities, the hypostases. It allows for the grounding in Christology of a universalist view according to which Christ exemplifies universal human nature, just as Plato or Socrates exemplify it. The assimilation of *physis* and *ousia* also gives *physis* the sense of 'specific essence', which seems less frequent in monophysite thought. The axiom according to which there is no *ousia* or *physis* without a hypostasis thus acquires a new meaning and becomes a full-blown thesis about universals. In the context of an ontology which admits universal entities, to say that there is no *ousia* without hypostasis is equivalent to rejecting the possibility of a universal *ousia* which is not instantiated by an hypostasis. The idea is not, as it was for the Monophysites, to link a particular nature with a given individual by maintaining that there is no nature which is not a

[18] See Cross 2002b.

person, but to state that a common entity cannot exist without being related to a hypostasis, that is to say, without being realised in it.

The other issue introduced by the adoption of the Cappadocian distinction between *ousia* and hypostasis is that of the types of entities to which the criterion of *per se* existence may be applied. The Cappadocian model, which is based on a distinction between *ousia* and hypostasis, involves transferring the criterion of independent existence. In this model, only Aristotelian secondary substances – genera and species – are called *ousiai*; individuals are called hypostases. The criterion of independent existence, which was characteristic of Aristotelian primary substances – and later of the Neoplatonic commentators of Aristotle, who qualify substance as subsisting *per se* (*authypostatos*)[19] – becomes characteristic of hypostases and cannot be applied anymore to *ousia*, the common entity. It then becomes necessary to specify the mode of being of the *ousia*/*physis* and to find a criterion of existence for it, which cannot be existence *per se*. If ontological independence becomes characteristic of the hypostasis, and if the *ousia* is to be distinguished from the hypostasis, then it is necessary to find for the *ousia* a characteristic mode of being. *Ousia* is not *anhypostatos* – this is the point of MA on which all contestants agree –, and since, in the Cappadocian frame of mind of Chalcedonians, it is not a hypostasis, it does not subsist *per se* (*authypostatos*) either. The solution is to be found in a third mode of being, called *enhypostatos*, a notion which takes several dozens of years to be defined precisely. At the end of the appropriation process, in the writings of John of Damascus, it characterises the mode of being of *ousia* as opposed to the hypostasis.[20]

The alternative which the Monophysites offer the Chalcedonians – between non-existing universals and necessarily instantiated universals – obviously reminds us of one of the introductory questions of Porphyry's *Isagoge*, which opposes things which subsist to things which are only concepts. The closeness in vocabulary between the two debates is even stronger if one thinks of a passage of Philoponus'

[19] Ammonius, *In Cat.*, *CAG* 4.4, 30: 8; 33: 12; 35: 15; Philoponus, *In Cat., CAG* 13.1, 20: 11; 46: 16; 49: 19; 53: 9; Olympiodorus, *In Cat., CAG* 12.1, 32: 36; 56: 4 and 7; Elias, *In Cat., CAG* 18.1, 162: 2.

[20] John of Damascus 1969, 61: 8–9: 'In its proper sense, the *enhypostaton* is […] that which does not subsist in itself but is considered in hypostases, just as the human species, or human nature that is, is not considered in its own hypostasis but in Peter and Paul and the other human hypostases'.

Commentary on the Physics[21] from 517, in which he opposes concrete beings (τὰ ἐνυπόστατα ὄντα) and beings whose only existence is conceptual (ἐν μόνῃ τῇ ἐπινοίᾳ τὸ εἶναι ἔχει).

The challenge which the Monophysites set to the Chalcedonians is ontological, since it involves providing Christ's humanity with ontological reality and, more broadly, giving an explanation of the mode of being of specific universals. Philoponus for example encourages his readers to focus not only on the language used to speak of Christ, but on Christ as a thing (*pragma*).[22]

Since it is unacceptable to admit two hypostases in Christ, and since the Monophysites have managed to impose the principle according to which *ousia* necessarily exists in a hypostasis, a solution has to be found in order to avoid having to accept only one nature. We can follow this path of thought through the writings of three pro-Chalcedonian authors, John the Grammarian, Leontius of Jerusalem and Leontius of Byzantium.

MA is frequently found in the controversy between John of Caesarea (also known as the Grammarian) and Severus of Antioch. John the Grammarian, the author of a *Defence of the Council of Chalcedon* (*Apologia Concilii Chalcedonensis*) which was written within the period 515–518, is among the first Chalcedonians to apply the Cappadocian definitions of Trinitarian terminology to Christology.[23] The main opponent of John is Severus of Antioch who challenges him with a variant of MA, 'there is no nature without a person' (1977, 51: 82). By means of a reasoning based on the Christological syllogism, he accuses the two nature theory of entailing two persons. Without entering into the details of John's reply, we may note that he highlights the fact that, as they are realised in the hypostasis, natures are just as real as hypostases, while not being hypostases: 'For the hypos-

[21] John Philoponus 1887, 4: 19–20.

[22] See John Philoponus, *Diatetes*, fr. 2 *apud* Nicetas Choniates, *Panoplia Dogmatica*, *PG* 140, 56B, quoted by Daley 2002, 167.

[23] He thereby imports into the Christological discussion the realism of the Cappadocian Fathers – first and foremost of Basil of Caesarea and Gregory of Nyssa. He proposes what amounts to a summary of Cappadocian ontology: an essence or nature is an entity common to several individuals whose substantial being it expresses. Individuals of the same species differ from one another, not essentially, but by a bundle of accidental properties which is proper to each person. When Chalcedon speaks of 'two natures' in the case of Jesus Christ, the second of those natures is the *ousia* which all men have in common (John of Caesarea, *Apologia Concilii Chalcedonensis*, in John of Caesarea 1977, 51: 67–69).

tasis is not different from the substance as for existence (τῷ εἶναι), but insofar as the one exists as common, namely the substance, the hypostasis, however, as proper, whenever together with that which is universal it is also in possession of that which is proper'.[24] The difference between *ousia* and hypostasis is found in their mode of being: the former exists as the universal in the individual (i.e. as *enhypostatos*), while the latter exists as an individual. As noted by Lang 1998, 638, even if it is deprived of the individualizing properties that make a *prosôpon*, concrete existence (τὸ ὑφεστηκέναι) can be attributed to *ousia*. It is implied by the position that a common nature or substance always exists as realized in a hypostasis.

With the two Leontiuses, the debate takes a truly philosophical turn. In the years 538–544, an other Chalcedonian author, Leontius of Jerusalem,[25] attempts to reply to the Christological syllogism. He accepts MA and reformulates it in positive terms:

> *Whenever there exist natures it is necessary for them to subsist and to be enhypostasized*[26]
>
> οὕτως οὖν ἐπεὶ μέν εἰσιν αἱ φύσεις, ἀναγκαῖον αὐτὰς καὶ ὑφεστηκέναι καὶ ἐνυπόστατους εἶναι

Every nature must be enhypostasized – it must exist in some particular concrete entity, in a hypostasis – if it is to exist at all. The idea of subsistence is clearly related here to its realisation in an hypostasis. According to Leontius of Jerusalem, a nature cannot exist without being realised in an individual entity – nothing subsists unless concretized as/in a hypostasis. Leontius thus joins his opponents and admits MA – that nothing subsists anhypostatically. Leontius states that it is not necessary for two natures to be individually enhypostasized by two different hypostases. Two natures do not have to differ through hypostasis: the enhypostatization of both of them can be considered in one and the same hypostasis (ἀλλ' ὡς ἀμφοτέρων ἐν μιᾷ κοινῇ δυναμένων ὑφίστασθαι ὑποστάσει 1561B). There lies the specificity of the case of the Incarnation: one of the natures does not subsist by subsisting in its own hypostasis, but rather by subsisting in the hypostasis of another

[24] John of Caesarea 1977, 55: 203–205; transl. Lang 1998, 637.
[25] For these lines I am indebted to Gray 1979.
[26] Leontius of Jerusalem, *Adversus Nestorianos, PG* 86, 1561C.

nature. This first nature is then united to the second, through a unity of hypostasis.

The most decisive – and also the most often discussed – contribution is that of Leontius of Byzantium. In his *Contra Nestorianos et Eutychianos*, Leontius of Byzantium interprets the human nature of Christ as universal. He takes as starting point of his reflection the Cappadocian distinction between *ousia* and *hypostasis*, a distinction which he immediately places in the context of an ontological inquiry. In his ontology, both hypostasis and *ousia* are existing things (πρᾶγμα ὑφεστώς), but they exist in different ways. The hypostasis is real in that it has being 'for itself' (καθ' ἑαυτό), the nature or *ousia* subsists in the way characteristic of 'universal things' (καθολικὸν πρᾶγμα), which is 'hypostatized' (*enhypostatos*), i.e. realized in a particular individual. Leontius wants to develop a theory of hypostasis and essence that is applicable both to the case of Christ and to other individuals. He emphasises the distinction between 'hypostasis' and that which is hypostasized (*enhypostatos*); hypostasis indicates a concrete individual, whereas that which is hypostasized indicates the essence. A text of Leontius, which begins by an explicit acknowledgement of his acceptance of MA, is central on this point:

> One speaks truly in saying 'there is no such thing as a non-hypostasized nature (*physis anhypostatos*)'. But one draws a false conclusion if one infers that a thing is a hypostasis from the assertion that it is not not-hypostasized (μὴ ἀνυπόστατον). Similarly, one can rightly say: 'there is no such thing as non-formed body (σῶμα ἀσχημάτιστον)'. But it would be incorrect to conclude that the form is a body; rather, it is only perceived in the body. Certainly, there is no non-hypostasized nature (or essence). A nature, however, is not a hypostasis, for there is no reciprocity here: a hypostasis is also a nature, but a nature is not also a hypostasis. A nature (*physis*) admits of the predication of being (*einai*); a hypostasis, of that of being by itself (καθ' ἑαυτὸν εἶναι). A nature is defined as a species, a hypostasis indicates that which is particular. A nature displays the characters of a universal thing, a hypostasis separates the particular from the common.[27]

This text is interesting in several aspects. First, note Leontius' unhesitant acceptance of MA: he takes care not to draw mistaken conclu-

[27] Leontius of Byzantium, *Contra Nestorianos et Eutychianos, PG* 86, 1277D-1280A. Transl. LeRon-Schults 1996, 439–440, modified.

sions, but his acceptance of the principle is clear. He makes it a basis for his own argument – as he does also later, in his *Epilysis*, where he states that, in Christology, the two natures are not without hypostasis, but also that, in the case of the Trinity, there is no hypostasis without a nature.[28]

In the passage from the *Contra Nestorianos*, Leontius rejects ontological particularism; reality is not only composed of individuals. He rejects the opposition between individuals which exist per se and non-subsistent entities. Universals are real entities, but they are not hypostases. They have their own mode of being, the *enhypostaton*, existence as realised in hypostases, which is not existence *per se*. Having noted that Leontius is not explicit on this point, Marcel Richard (1938, 32) made the interesting suggestion of defining the *enhypostaton* as 'that which subsists in a hypostasis and is not *per se*.' The example chosen by Leontius in this passage is interesting. In a formulation reproducing MA, he states that there is no body without form, but that it is mistaken to conclude from this that form is a body. In the same way, we cannot conclude, from the fact that a nature cannot subsist without a hypostasis, that the nature is a hypostasis. The example is telling: form and body taken together form an individual. The same is true of the nature and the hypostasis: an individual is an hypostasis which instantiates a given nature, that of the species to which it belongs. When Leontius adds that the form is perceived in the body, it is tempting to read, by analogy, that the nature is perceived in the hypostasis – John of Damascus was later to say it explicitly. The fact that Leontius, who has a strong Aristotelian background, refers to hylomorphism – despite the fact that he speaks of body and not of matter, the underlying pattern is obvious – is interesting with regard the issue of immanence of the form. Aristotle states (among other places, in *De anima* 403b 2–3) that a form can only be if it is realised in matter. This leads us to understand the nature or essence – i.e. the entity qualified as *enhypostatos* – as realised in the hypostasis, in the same way as a form is present in a body.

We have a testimony of the extent of the acceptance of MA during the sixth century and of the thesis according to which specific universals exist thanks to their instantiation in individuals: John Philoponus'

[28] Leontius of Byzantium, *Epilysis, PG* 86, 1921A.

Diatetes,[29] a text dating from 552 which is a philosophical justification of monophysism. In chapter 7 of this treatise – which is extant in Greek in John of Damascus's *De haeresibus* – Philoponus presents the position which is, according to him, that of the Church, before attempting to refute it. He says that, in ecclesiastical terminology – an expression which reminds us of Boethius' *ecclesiasticus loquendi usus* or *ecclesiastica locutio* (*Contra Eutychen et Nestorium*, III, 96 and IV, 4), as noted by Lang – individuals are called hypostases, and he justifies his statement thus:

> In the language of the Church, however, [individuals] are called hypostases, because in them the genera and the species get their existence (*hyparxis*). For, although there is a peculiar essence for animal, let us say, and for man, of which the former is the genus and the latter the species, yet it is in the individuals that these have their existence – as in Peter and Paul, for example – and apart from the individuals they do not subsist (χωρὶς τούτων οὐχ ὑφιστάμενα).[30]

Philoponus lends to the Chalcedonians a precise thesis on the existence of specific and generic universals; this thesis is philosophical in nature and is expressed in philosophical language. Species have existence (*hyparxis*) in individuals and don't have any being separate from individuals. The fact that Philoponus presents the Aristotelian thesis of the immanent existence of universals as being the position of the Church is very telling as to the importance of logic in Christological discussions.

Philoponus' text testifies of a wide agreement on MA, to the point of presenting it as the usual way of speaking of the Church; however the Aristotelian origin of the thesis remains present in the mind of Christian theologians. One century after John Philoponus, in the second half of the seventh century, Anastasius of Sinai considers this issue in his *Viae dux*. He maintains that the heresy of monophysism is grounded on a particularist interpretation of Aristotle. According to him, Aristotle states that persons are particular substances (whereas we have seen that the direction taken by Christian thought on logic was to speak of substance only in the case of genera and species, and to refer to individuals with the word 'hypostasis'). Severus is taken to

[29] On this text and its doctrinal consequences, see Lang 2001.
[30] John Philoponus, *Arbiter, apud* John of Damascus 1981, 51: 46–50.

have grounded his belief that Christ has only one nature on this 'impious' (*anomos*) definition. Anastasius continues with this remark:

> […] it is not in the Scriptures or in the Gospels, but in Aristotle's *Categories*, that they [the Monophysites] learned to say that nature is also person, that is, 'there is no such thing as a nature without a person'.[31]

Although Aristotle would probably have been surprised, at least as to the vocabulary, to be lent the thesis according to which 'nature is also person', Anastasius' remark is relevant. The link which he makes between MA, which is quoted on the last line, and the passage from the *Categories* is legitimate. MA is a doctrinal element which is exogenous to the Christian tradition, and it does originate in Aristotelian logic.

At the end of this brief consideration of a debate which cannot be addressed here in its full complexity, let us return to our starting point, first to Boethius, then to Anselm and Odo, before drawing some conclusions.

Boethius presents a complex case; his philosophical culture – in particular his direct acquaintance with the texts of Aristotle and Alexander of Aphrodisias – sets him apart in the history of this problem. He is clearly the Church Father who gave the most in-depth consideration to the subsistence of universal entities as a philosophical problem. As an illustration of his philosophical commitment, note that, in the sentence from the *Contra Eutychen et Nestorium* which was quoted at the beginning of this chapter, Boethius does not use the theological vocabulary of *nature* and *person*, but philosophical words, such as *universals* and *individuals*. However, far from dissociating these problems, this treatise is instrumental in relating the issues concerning the categories and theological thought. Not only does it state clearly that universals subsist in particulars, it also opposes the way of being of genera and species to that of individuals: 'Itaque genera et species subsistunt tantum […], individua vero non modo subsistunt, verum etiam substant.'[32] *Subsistere* is the mode of being characteristic of genera and species as they are realised in individuals. *Substare* is the mode of being of individuals as they are the substrate of accidents.

[31] Anastasius of Sinai 1981, 100: 11–17.
[32] Boethius 2000, 216: 213–216.

As for Anselm and Odo, they appear to have reached their Aristotelian position through the indirect path of theology. Both the vocabulary – the use of *nature* and *person* – and the form of Odo's and Anselm's statements refer to the theological debate, which they may have heard of from several sources. The relation between the two theological debates can be explained as follows: in the case of original sin, they seek to analyse the relation of an individual to its species in the case of a monadic species. Transferring the debate from the case of Christ to that of Adam seems quite natural. In both cases, the idea is to analyse the ontological structure of a given individual, to explore the relation it has to its specific nature, to consider whether its species is universal, whether it is immanent, and so on. Despite the obvious fact that the Christological debate is more complex – given the issue of the two natures – the same concepts are used in both discussions.

Several conclusions can be drawn from the acceptance by all sides of MA. The first is historical: we have here good proof of the influence of (at least, logical) Aristotelianism on Christian minds from the end of the fifth, but more importantly from the sixth century onwards. With the weakening of the rivalry between Christianism and paganism, it becomes easier for Christians to accept the pagan inheritance. Logic provides a set of principles on which defenders of such incompatible positions as those of the Monophysites and the Chalcedonians can agree. The acceptance by both parts of MA – even if the meaning given to it varies – and the perceived relevance of a thesis of this kind (i.e. a logical-ontological axiom) testify to the increased technicality of the debate and to the fact that it has taken a clear philosophical turn.

The acceptance of MA also highlights a change in the understanding of logic and its object. Accepting an axiom whose philosophical origin is clear and admitting that it becomes one of the most often mentioned arguments in the Christological debate testifies to the recognition of the value of logic in theology. The Cappadocian treatment of the *ousia* of the Trinity as a universal had already allowed Aristotelian thought on secondary substances to enter the field of theology. The acceptance of MA continues this tendency: a new aspect of Aristotelianism – the rejection of separate universals – is now considered to be relevant. This evolution had been prepared by Cappadocian thought: if the one *ousia* of the Trinity is a universal, it must be immanent and instantiated in an Aristotelian way, and not separate in a Platonic way. If the Platonic version were to be accepted, we would find ourselves with a

quaternity: the three person and the separate universal, which is obviously theologically unacceptable.

From a philosophical perspective, this debate illustrates the increased influence exercised by Aristotle in comparison with Plato. This preponderance is obvious in the School of Alexandria – think of the difference in the number of commentaries dedicated to the work of the two philosophers – and in Boethius, but also in circles where the practice of philosophy is not the central activity. The Cappadocian distinction between *ousia* and hypostasis, already, was grounded in a re-conceptualized version of the Aristotelian distinction between primary and secondary substances. Here the Aristotelian background is even more clear, since the thesis under consideration is anti-Platonic.

Let us conclude with a methodological comment. The history of Aristotelian logic – of the philosophical concepts which originate in the *Organon* and Porphyry's *Isagoge* – is complex. Theses and problems do not develop in a straightforward fashion and their history is considerably influenced by external factors. Some logical theses were for example upheld or questioned on the basis of motivations exterior to logic. The success of given ideas or readings, their diffusion and positive reception depended not only on their intrinsic philosophical interest but also on the fact that they appeared to provide, for example, a better theological solution to a given problem than rival ideas or readings. For example, realism about universals was seen for a long time as being the most appropriate doctrine about genera and species in order to answer theological problems such as the Trinity or original sin. Confronted with this, an historian of philosophy can choose either to disregard everything that does not belong strictly speaking to the history of logic, or to adopt a wider point of view and consider the – often productive – use of logic outside its own field. Neither of these approaches should completely exclude the other; however, it seems that a history of logic which did not take into account the debates that took place outside institutional philosophical structures, though perhaps not missing any major innovation, would provide only a partial historical representation and would leave unused one of the relevant keys to understanding its object.

WHAT COUNTED AS LOGIC IN THE THIRTEENTH CENTURY?*

Sten Ebbesen

Introduction

The aim of this article is to see what thirteenth-century academics themselves thought about the delimitation of the discipline of logic. Though some of the elements of my account will also be valid for the twelfth or the fourteenth century, many will not. Major institutional and intellectual changes took place in the decades around 1200, and intellectually, at least, major changes again occurred in the early fourteenth century, when some great logicians began to show a less reverent attitude towards Aristotle than had been traditional.

Delimitation by Genre

It is not possible to delimit thirteenth-century logic from other university disciplines by means of the oral and written genres employed. Knowledge was transmitted by much the same means in all disciplines – handbooks (*summae*), literal commentaries, questions, and super-questions. By super-questions I mean such things as the grand sophismata among the artists and the theologians' quodlibets. Though exceeding the ordinary *quaestio*, these exercises are all built on the simple *quaestio*, which they amplify by means of certain recursive devices.

Certain oral exercises and their written reflections have names peculiar to either the faculty of arts or that of theology. Sophismata and treatises on obligations both belong in the faculty of arts, and as far

---

* Notice that when I quote Latin texts, whether edited or unedited, I do not always respect the orthography or the punctuation found in the edition or in the manuscript. I am grateful to Dr Alexander André and Mr Heine Hansen for having let me use unpublished editions of theirs. Dr David Bloch kindly proof-read my manuscript and discussed the contents with me.

as contents are concerned, sophismata are originally and for the most part logical, though grammatical ones also occur, while obligations are purely logical. Quodlibets reflect events in the faculty of theology, but are not always theological when it comes to contents. The products of the two also exhibit some differences of format, but these are superficial and offer no interesting criterion for distinguishing logic from other disciplines, whether in our eyes or, I submit, in the eyes of the medievals. At least, I have never seen any medieval author appeal to such a criterion.

De Subiecto Logicae

In the thirteenth century there were several competing views about how to define the subject-matter of logic. Discussing the question was a must at the beginning of every course on the *Ars Vetus*, and might also be taken up in the introduction to a course on one of the later books of the *Organon*. In the second half of the century the answer would be likely to include a distinction between what is common to all parts of logic predication-wise and what is common to them attribution-wise. All parts deal with matters that have attribution to, i.e. aim at the syllogism, but they are not all directly about syllogisms. By contrast, every single item dealt with in a non-incidental way in logic falls under some such high-level predicate as 'being of reason', 'second intention', or 'mode of knowing'. This was the view of Radulphus Brito in the 1290s, but he was far from being the only one to think so.[1]

Unfortunately, the *quaestiones de subiecto logicae* do not help much in delimiting what the field of logic was thought to encompass at the time, nor do the many *divisiones scientiae* with their subdivisions of logic into its parts, because no matter what theoretical stand an author

[1] Radulphus Brito, *Porph. Int.* qu. 4 = id., *APo.* qu. I.4, here quoted from Ebbesen and Pinborg 1981: xv–xvi: 'Aliqui dicunt quod ens rationis est subiectum in logica, alii quod syllogismus, alii quod modus sciendi. Sed non est vis quocumque modo dicas, quia omnes modi sciendi sunt entia rationis, et inter istos modos sciendi syllogismus est principalior modus sciendi. Et ego dico duo ad quaestionem: primo quod subiectum in logica est ens rationis sive secundae intentionis, subiectum dico commune per praedicationem. Sed subiectum commune per attributionem est syllogismus.' In the first decade of the 14th c. this view was rejected by Bartholomew of Bruges in his *Sophisma de subiecto logicae*, (Ebbesen and Pinborg 1981, 39).

takes, you can be sure that each of his parts of logic corresponds to one of the traditional authoritative logic books.[2]

The Organon

There was little discussion about which authoritative books were logical. The backbone of logic was the Aristotelian *Organon*. Nobody doubted that, and some expressed it by saying that the books of the *Organon* were *de esse logicae*.[3] Divisions of logic usually add some of the associated works by secondary authorities, notably Porphyry's *Isagoge*, the anonymous *Sex principia* and one or more of Boethius' monographs. These were said by some to be *de bene esse logicae*.[4]

To Lambert of Auxerre, who was active about the middle of the thirteenth century, logic is the knowledge of how to discern the true from the false by means of argumentation,[5] and the logician's goal in all his work is to master the perfect syllogism.[6] According to Lambert, the books of logic are exactly six, namely the six books of the *Organon*.[7]

Roger Bacon in his *Summulae dialectices* distinguishes between logic as a science and as an art. Logic as an art is knowledge of how to take part in a disputation. This seems to open up the possibility for considering training in certain disputational skills as learning logic. But Bacon's own handbook of logic is about scientific logic, which he defines in a similar way as Lambert. Its subject, he says, is argument or

---

[2] A minor exception: John of Dacia and some others thought a book on division was missing. See n.11 below.

[3] The distinction between books *de esse* and *de bene esse logicae* is found, e.g., in Simon of Faversham, *Quaestiones super librum Porphyrii*, prooemium, (Simon of Faversham 1957, 15).

[4] Thus Roger Bacon, *Summulae dialectices*, Prologus, § 18, (Roger Bacon 1986, 173). See quotation in n. 8, below. A detailed review of 13th-century divisions of logic is found in Marmo 1990.

[5] Lambert of Auxerre, *Logica* (Lambert of Auxerre 1971, 4): 'Item quaeritur quid sit logica. Logica est scientia discernendi verum a falso per argumentationem.'

[6] Lambert of Auxerre, *Logica*, (Lambert of Auxerre 1971, 6): 'sicut tota intentio grammatici est ut habeat orationem perfectam et congruam, sic tota intentio logici est ut habeat syllogismum perfectum.'

[7] Lambert of Auxerre, *Logica*, (Lambert of Auxerre 1971, 5): 'Unde logica traditur in omnibus libris logicae, qui sunt sex, scilicet liber Praedicamentorum, liber Periermeneias qui nunc dicuntur vetus logica, libri Priorum, Posteriorum, Topicorum et Elenchorum, qui quattuor dicuntur nova logica.'

syllogism, which, he claims, is much the same thing, since every argument is either a syllogism or reducible to a syllogism. Scientific logic has five essential parts, *Categories, Perihermeneias, Posteriora, Topics, Elenchi* plus *Priora*, with *Isagoge* and *Sex principia* as supportive, but not essential extras.[8] The strange idea of adding the *Prior Analytics* as an afterthought has no consequences for the structure of Bacon's *Summulae*, since he proceeds in the standard manner from predicables to fallacies, smuggling in Boethian topics as an appendix to the dialectical syllogism. Bacon also entertains a proposal to consider a book about *disputatio temptativa* a part of scientific logic, but rejects it because the discipline is about a kind of disputation, and thus at best falls under logic *secundario et quodammodo.* The idea that Aristotle had written such a book had arisen to account for a passage in the *Sophistici Elenchi* (2.165b4–7), which in Boethius' translation ran: 'temptativae {*sc*. disputationes} vero quae ex his quae videntur respondenti et necessarium est scire ei qui simulat habere scientiam. Quomodo autem determinatum est in aliis.' ['Test-disputations are those that proceed from propositions that the answerer believes in, and which anyone who pretends to possess <a particular type of> knowledge must know. How that works has been laid down elsewhere']. Commentators were uncertain whether *in aliis* ['elsewhere'] referred to the *Topics* or to a separate work not available in Latin.[9]

---

[8] Roger Bacon, *Summulae dialectices*, Prooemium, 11– 19 (Roger Bacon 1986, 172–4). Extracts: § 11: 'Logica vero secundum quod est scientia est habitus discernendi verum a falso per regulas sive dignitates, quibus comprehendimus veritatem locutionis per nosmetipsos vel cum aliis.' § 14: 'Subiectum autem eius est argumentatio sive syllogismus, quia omnis argumentatio est syllogismus aut ad syllogismum reducitur.' § 18: 'Et continet logica quinque partes ad minus, sc. librum Praedicamentorum, qui est de termino, librum Perihermeneias, qui est de propositione sive enuntiatione, librum Posteriorum, qui est de syllogismo demonstrativo, librum Topicorum, qui est de syllogismo dialectico, librum Elenchorum, qui est de syllogismo sophistico. Et quidam dicunt librum sextum qui est de syllogismo temptativo, sed melius potest dici quod scientia potest tradi de temptativa disputatione, eo quod temptativa est differentia essentialis disputationis eo quod haec est ad aliud sicut disputatio. Ista tamen scientia non primo et principaliter est pars logicae sed secundario et quodammodo subalternatur eidem, eo quod logica est de syllogismo et de differentiis syllogismi, temptativa non, sed de disputatione. Praeter autem istos est liber Priorum, qui est de syllogismo in se et absolute considerato. Liber autem Porphyrii et libri Boethii non sunt de substantia artis nec de esse, sed de bene esse logicae; et similiter Sex Principiorum'. § 19: 'Logica vero secundum quod est ars est ratio discernendi diligens, id est sedula scientia disputandi.'

[9] Anonymus Monacensis (mid–13th c.), *Comm. SE*, ms Admont 241: 12vb: 'determinatum est in aliis libris, in alio enim libro determinatum est de temptativis, quod opus forte non est apud nos latinos; vel secundum aliquos de illis determinatum <est>

Some decades later, John of Dacia holds that logic is about *modus sciendi*, and that there are three types of way of knowing, namely by division, by definition and by syllogistic inference.[10] Division is covered by Boethius' work on the subject, he says, but a book on definition is missing, though *Metaphysics* VII and *Posterior Analytics* II may perhaps be said to provide what is needed. The whole of the Aristotelian *Organon* is about syllogistic: *Categories* by treating of the remote integral parts of syllogisms, namely terms, *Perihermeneias* by treating of proximate integral parts, namely propositions, *Prior* and *Posterior Analytics* as well as the *Elenchi* by treating of their several sorts of syllogism. *Sex principia* is mentioned as a supplement to the *Categories* and Boethius' *Topics* as a complement to Aristotle's homonymous work. Porphyry's *Isagoge* is classified as a book that is not about *modus sciendi* in itself, but about some matters of use to logic proper.[11]

The only somewhat interesting feature in John's list of the parts of logic is the inclusion of definition and division with the added note that there is no book about definition. The note about definition seems to rely on Albert the Great, who in turn relied on Avicenna.[12] What

---

in Topicis.' Giles of Rome (1270s) *Expositio SE* (Giles of Rome 1500, 7vb): 'determinatum est in aliis, ut in Topicis; vel in aliis quia forte aliquem librum fecit de temptativa disputatione qui {quae *ed.*} ad nos non pervenit.'.

[10] John of Dacia, *Divisio Scientiae* (John of Dacia 1955, 38–39): 'Cum logica sit de modo sciendi ut de subiecto cui omnia determinata in logica attribuuntur, vel potest considerari modus sciendi secundum se et suas partes vel secundum quoddam quod est adminiculum ad modum sciendi. Si secundo modo. […] Si autem logica sit de modo sciendi quantum ad suum partes, hoc est tripliciter secundum quod est triplex modus sciendi. Est enim modus dividendi, modus definiendi et modus colligendi seu syllogizandi.' The division into these three parts of logic has ancient roots; see, e.g., Cicero, *Academici* 1.2.5. One possible source for the medievals was Boethius, *In Topica Ciceronis* (Boethius 1847, 1045B): 'Hanc igitur Plato dialecticam dicit; Aristoteles vero logicam vocat, quam (ut dictum est) Cicero definivit diligentem disserendi rationem. Et huius uno quidem modo trina partitio est: omnis namque vis logicae disciplinae aut definit aliquid, aut partitur, aut colligit. Colligendi autem facultas triplici diversitate tractatur:' See also Marmo 1990: 174.

[11] John of Dacia, *Divisio Scientiae* (continuation of passage quoted in note 10) (John of Dacia 1955, 39): 'Si est de modo dividendi, sic est liber Boethii de divisionibus, cuius subiectum est modus dividendi. Si vero est de modo definiendi, sic dicitur quod de ipso non habemus scientiam, est tamen in Graeco in quibusdam libris Metaphysicae qui nondum sunt translati in Latinum; vel potest dici quod de modo definiendi habemus scientiam in septimo Metaphysicae vel in secundo Posteriorum, ubi docetur venari quod quid est non via divisiva tantum nec via syllogistica tantum, sed via composita ex divisione et syllogismo.'

[12] Albert the Great, *Super Porphyrium* 1.5 (Albert the Great 2004, 8b: 'Istae igitur sunt duae partes logicae: una quidem ut dentur principia per quae sciatur definitio rei et quiditas […] alia vero ut doceantur principia qualiter per argumentationem

makes it interesting is that it indicates that John did not consider Victorinus' *De definitionibus* an authoritative work.[13]

Rhetoric and Poetics

In the second half of the century there was an Arab-inspired attempt to incorporate rhetoric and poetics, and Aristotle's relevant books, among the parts of logic.[14] Thus Simon of Faversham in one place[15] divides logic into an apprehensive part corresponding to the *Categories*, a compositive one corresponding to *Perihermeneias*, and a reasoning one with the subparts judicative (*Posterior Analytics*), inventive, and sophistic. The inventive has the subparts dialectic, rhetoric and poetics. Elsewhere, Simon assigns rhetoric and poetics a place between topics and sophistics.[16] Interestingly, after having given an ideal order with *Prior* and *Posterior Analytics* in their standard place between *Perihermeneias* and *Topics*, he adds that for more ease, the *Prior* and *Posterior Analytics* are put after *Topics* and *Elenchi*, by which he probably means that in practice students would be taught the easier dialectical works before the difficult-to-digest *Analytics*.[17]

---

probetur enuntiationis veritas vel falsitas […] Sed prima harum partium vel ab antiquis tradita non est vel ad nos non pervenit. Hanc enim partem dicunt Avicenna et Alfarabius ad Arabes non pervenissse. […] Quod autem quidam dicunt hanc tradidisse Aristotelem in VI Topicorum frivolum est. […] Adhuc autem quod quidam alii dicunt hoc pertinere ad metaphysicum et Aristotelem hoc tradidisse in VII et VIII Philosophiae primae, hoc absurdum est.' Avicenna, *Logica* (Avicenna 1961, 2va: 'Est ergo hic quoddam quod solet prodesse ad sciendum id cuius intellectus nescitur, non est autem usus ut intentio continens hoc (secundum hoc quod scientia eius prodest ad scientiam intelligendi) vocetur communis. Aut fortasse nondum pervenit ad nos ut una. Unum enim eorum est definitio, et aliud descriptio, et aliud exemplum, et aliud quod est signum, et aliud est nomen.'

[13] Before John, Arnulf of Provence had also neglected Victorinus' work, claiming (Lafleur 1988, 343) that 'Pars autem definiendi et dividendi traditur a Boethio in libro Divisionum, licet principalis sit pars dividendi.'

[14] Cf. Marmo 1990, 159ff.

[15] Simon of Faversham, *QN* prooem. (Simon of Faversham 1984, 103). More about Simon's divisions of logic in Marmo 1990: 170–172.

[16] Simon of Faversham, *QV* prooem. (Simon of Faversham 1984, 28): 'Unde prima pars logicae est de termino simplici, puta liber Praedicamentorum; secunda pars de enuntiatione, sicut liber Peri hermeneias; tertia, sicut tota Nova Logica, est de syllogismo. Unde Novae Logicae quaedam pars est inventiva, quaedam iudicativa. Iudicativa puta Priora et Posteriora; inventiva autem tres habet partes, scilicet rhetoricam, poeticam et sophisticam.'

[17] Simon of Faversham, *Quaestiones super librum Porphyrii*, prooemium, (Simon of Faversham 1957): 'Item, cum post dialecticam et demonstrationem per prius salvetur

The attempt to include rhetoric and poetics in logic never had any consequences outside the *divisiones logicae*. Sums of logic did not start to have sections on the two additional subjects. To Radulphus Brito,[18] in the 1290s, the skeleton of logic was again the Aristotelian *Organon* plus *Porphyry* and *Sex principia*, Boethius' *Topics* and *De divisionibus*, with the minor authorities' works seen as supplements to *Categories*, *Topics* and *Posterior Analytics*.

The Place of Medieval Novelties in Logic

Thirteenth-century logicians seem to have been blissfully oblivious of their own original contributions to logic, the sort of thing they dealt with in sophismatic disputations and in treatises on the properties of terms.

Sophismatic disputations were probably seen as just a type of dialectical disputation, and obligational disputations certainly were seen that way, at least by Boethius of Dacia, who in his questions on Aristotle's *Topics* inserted a highly interesting miniature treatise on the art of obligations.[19]

It is perhaps unsurprising that the medievals should view such disputations as merely techniques rather than as new logical territory. It is, however, surprising that apparently no one thought that the field covered by treatises on the properties of terms might be a genuinely new territory not covered by any Aristotelian work – or if someone thought so, he did not think aloud.

The handbooks of logic generally work their way from *vox* to terms and then through propositions to arguments in a way that was inspired by Boethius' opuscula. They also generally contain at least one chapter on such properties of terms as supposition. William of Sherwood,

---

natura syllogismi in syllogismo rhetorico quam poetico, immediate post scientiam Topicorum debet sequi scientia Rhetoricorum. Postmodum cum forma syllogismi reperiatur in syllogismo poetico, immediate post scientiam rethoricorum oportet sequi vel ordinari scientiam poeticam. Ultimo autem inter partes logicae ordinari debet scientia sophistica, quoniam in syllogismo sophistico totaliter deficit forma et ratio syllogismi. § Sic ergo deberent ordinari partes logicae inter se. Tamen propter facilitatem doctrinae praeordinantur libri Topicorum et Elencorum, ultimo autem libri Priorum et Posteriorum.'

[18] Ebbesen and Pinborg 1982, 290–93.

[19] Boethius of Dacia *Quaestiones super librum Topicorum*, VIII.14 (Boethius of Dacia 1976, 329–331).

in his *Introduction to Logic*, tells us that knowledge of signification, supposition, copulation and appellation is useful to understanding terms and, via terms, also enunciations and propositions, and similar remarks may be found elsewhere.[20] But neither he nor anyone else has managed to integrate what they want to say about supposition etc. at what might seem to be the proper point, namely in the initial discussion of terms. Instead they dump the new material at the end of the *summa* or wedge it in between the topics and the fallacies without any explanation of why it should be there, and without explicit mention of the fact that their logic books cover fields not covered by Aristotelian logic.[21]

If we turn to the treatises on syncategoremes and sophismata, and look at Richard's *Abstractiones* and Peter of Spain's *On syncategoremes*, the two men stonewall us. Not a word about the place of the lore of syncategoremes in logic, or, for that matter, in any other sort of systematic knowledge. For reasons that are less than obvious to a modern observer, Peter's long treatise on syncategoremes ends with some brief remarks about various aspects of disputations and syllogisms. If anything, this suggests that Peter conceived of syncategorematics as an auxiliary of Aristotelian dialectic. Matthew of Orléans is slightly more informative, making it clear that his work on *distinctiones* is intended to serve *ars sophistica*,[22] and another 13th-century treatise on *distinctiones* is called *ars sophistica* in the explicit.[23] Since the scholastic

---

[20] William of Sherwood, *Introductiones* V (William of Sherwood 1995, 132): 'Quattuor sunt proprietates termini, quas ad praesens intendimus diversificare. Harum enim cognitio valebit ad cognitionem termini, et sic ad cognitionem enuntiationis et propositionis.' The anonymous *Logica 'Cum sit nostra'* starts the chapter on properties of terms with the words (*LM* II.2: 445): 'Ut dicit Aristoteles, omnis syllogismus constat ex propositionibus et propositio ex terminis. Ideo ad cognitionem syllogismi primo oportet praecognoscere terminos.'

[21] (1) Between topics and fallacies: Sherwood, *Introductione* and Anon., *Logica 'Cum sit nostra'*. (2) At the end: Anon., *Dialectica Monacensis* and Lambert of Auxerre, *Logica*. A combination of (1) and (2) Peter of Spain, *Summulae*.

[22] Matthew of Orléans, *Sophistaria* ed. Spruyt, I.1 p. 83: 'Quoniam ignoratis communibus necesse est artem ignorare, sicut vult Aristoteles in libro Elenchorum, et in arte sophistica necesse est ipsa communia cognoscere, ne ipsis ignoratis tota scientia ignoretur, propter hoc aliquid de communibus determinare intendimus secundum possibilitatem nostri ingenii. Et non ad propria circa quaeque sophismata descendendum est nec nova et inaudita dicere volumus, sed communes distinctiones quae saepe accidunt in sophismatibus, sicut posuerunt antecessores nostri, intendimus, ut in hoc possint minores proficere et per hoc ad maiora devenire.'

[23] Anonymus, *Ars sophistica* (second half of 13th c.), ms Praha, MK, M.80, 151r–156r. The explicit is simply 'Explicit ars sophistica'.

logicians almost ostentatiously fail to distinguish between their own 'syncategorematic' *ars sophistica* and the one of Aristotle's *Sophistici Elenchi*, it seems a fair guess that they saw their own as part of an art of detecting flaws in argumentation, the foundations of which had been laid in Aristotle's book.

Border-line Disputes

Everybody could agree that investigations of created beings or of the creator himself were not logic, since that would mean confusing logic with the real sciences ('real' here as opposed to 'purely formal'). Nor could an investigation of the right sort of human behaviour count as logic. Sure, there was the notion of *logica utens*, but however much you might apply your logic in discussions of theology or physics or ethics, that would not mean that you were doing logic. Boethius of Dacia is particularly clear on this issue: 'affirming one opposite implies denying the other opposite' is a logical maxim, and it may be used to support the inference 'This is hot, consequently it is not cold'. But, if you do so, you leave pure logic, for 'hot' and 'cold' are not logical notions, since they belong in natural science. Qua logician you can only speak the logician's metalanguage.[24]

The border-line between logic and grammar was a little fuzzy. Both operated with the notion of signification, both could dispense with knowing what entities would fall under an actual categorematic term, but they both needed to be able to distinguish between particular and universal terms, alias proper and common names. But this and similar matters were minor border issues, and in the case mentioned it might, for instance, be held that the distinction between the individual and the universal version of one and the same common nature is a piece of

[24] Boethius of Dacia, *Modi Significandi* qu. 18 (Boethius of Dacia 1969, 68f.): 'Dialecticus considerat communes intentiones et habitudines locales ex illis causatas, per quas confirmat suas argumentationes, sed ipsas speciales naturas rerum non considerat a quibus causantur illae habitudines locales. Unde si quaeratur a dialectico utrum sit bonum argumentum 'hoc est calidum, ergo non est frigidum', dicit quod sic proper habitudinem contrarii ad contrarium. Tamen antequam talem habitudinem inveniat, necesse est quod ipse consideret naturas rerum quae per terminos significantur et sciat illos esse incompossibiles. […] Sed tamen secundum quod ipse naturas rerum considerat non est dialecticus sed philosophus.' Cf. qu. 8, p. 34.

metaphysical fact that each of the two trivial disciplines appropriates in its own way.[25]

Other minor borderline cases arose when a phenomenon such as solecism was treated both by a grammatical authority and by Aristotle. But such border-disputes were settled amicably. Most people would agree with the man who claimed that the grammarian studies solecism qua impediment to grammaticality, the logician qua impediment to truth and falsity.[26]

The real problem was the border between logic and metaphysics, or so one would think. First and foremost, what to do with the predicables and the categories? In the 16th and 17th centuries it was widely held that strictly speaking both belong to metaphysics, and that if any part of Aristotle's *Praedicamenta* is logical, it is the *Postpraedicamenta* and possibly the *Antepraedicamenta*. The question seems to have raised relatively little interest in the thirteenth century, though it is touched on already by Kilwardby, according to whom

> [t]he first philosopher does not study the categories with a view to their relation to speech, but the logician does just that, for the first philosopher investigates them in their capacity of parts and species of being, the logician in their capacity of predicates and subjects. Besides, the first philosopher only studies the parts of being with a view to their reduction to being, the logician only studies being in its parts.[27]

---

[25] This, apparently, was the opinion of Boethius of Dacia; see his *Modi Significandi* qu. 19.

[26] Anon., *Communia Visitatio* (ed. Ebbesen 2002, 190–191): 'Arguitur quod non sint quinque metae. […] *2.* Item, illud quod est de consideratione grammatici non debet esse meta; sed soloecismus est de consideratione grammatici; ergo non debet esse meta. […] Ad secundum dicendum est quod soloecismus potest dupliciter considerari, a grammatico et a logico. Uno modo consideratur a grammatico secundum quod est impedimentum congruitatis, et alio modo consideratur a logico secundum quod est impedimentum veritatis et falsitatis, vel secundum quod nominat mihi causam apparentiae vel causam defectus; et hoc modo potest esse meta.'

[27] Robertus Kilwardby, *Comm. Cat.* (ca. 1240), ms Cambridge, Peterhouse 206: 42rA–B: 'Dubitatur hic primo an sit scientia de generibus primis […] Cum hoc simul hic quaeratur qualiter intentio primi philosophi stat super haec, et qualiter intentio logici. […] Et quod consequennter quaeritur solvitur per hoc quod intentio primi philosophi stat super haec praeter (p^r *cod.*) relationem ad sermonem, intentio vero logici per relationem, quia primus philosophus considerat haec prout sunt partes et species entis, logicus uero prout in praedicatione et subiectione consistunt. Et praeter hoc intentio primi philosophi non stat super partes entis nisi in quantum reducuntur ad ens; intentio autem logici non stat super ens nisi in suis partibus.' Cf. Anon., *Comm. VI Principia*, ms Cambridge, Peterhouse 206: 21vA: 'Videtur quod ista scientia', i.e. *Sex principiorum*, 'non contineatur sub logica. Boethius dividit logicam in artem iudicandi et inveniendi, sed ista scientia non dividitur in artem inveniendi et iudicandi, ergo ista scientia non est de logica nec continetur sub logica. Praeterea tota

Another mid-century author briefly notes that it is all right that Aristotle treats of substance both in the *Categories* and in the *Metaphysics*, because the metaphysician deals with substance insofar as it is an essence, the logician insofar as it is something that can be ordered under a genus.[28]

When we reach the 1270s, Peter of Auvergne offers an argument to the effect that the categories are modes of the being, and hence a matter for the metaphysician. Peter's solution is that if we speak of the categories according to their entity and essence, we are doing metaphysics, whereas if we speak of them in so far as they are the foundations of second intentions, we are doing logic.[29] A similar question by the roughly contemporary Anonymus Matritensis offers the same answer with the addition that the categories may also be seen as a principle of movement and rest, and under that aspect they belong to the natural scientist's sphere.[30] Neither of the two authors mentions which second intentions have the categories for their the foundation.

---

logica fit de sermone, sed ea de quibus fit ista scientia sunt res et non sermo, ergo ista scientia non est de logica.… Dicendum quod ista scientia est de logica et subalternatur logicae, et similiter continetur sub logica. […] Ad aliud dicendum quod ea de quibus determinatur in ista scientia non sunt res solum, sed significantur per sermonem, et ideo est de logica.' In the prologue of his commentary on the *Posterior Analytics* Kilwardby also briefly touches on the question whether demonstration belongs to logic or to metaphysics, but no strong arguments are offered for the latter choice.

[28] Anonymus Domus Petri 206, *Comm. Cat*., (Anonymous 2008, 134): 'Hoc habito quaeritur de dictis in littera, et primo videtur quod non deberet determinare de substantia, quoniam quod determinatur in una scientia non debet determinari in alia. Sed in Libro metaphysicae determinatur de substantia. Ergo non deberet hic determinare de substantia. […] Solutio. Ad primum istorum dicendum est quod quando dicitur 'quod determinatum est in una scientia non debet determinari in alia', hoc verum est – eodem modo; tamen diversimode bene potest. Et sic est hic, quia in isto libro determinatur de substantia prout ordinabile in genere et in Libro metaphysicae prout est essentia quaedam. Et per hoc patet quomodo diversimode determinatur de substantia in isto libro et in *Libro metaphysicae*.'

[29] Peter of Auvergne, *Quaest. Cat.* (Peter of Auvergne 1987, 11): 'Tunc quaeritur utrum praedicamenta sint de consideratione logici. <1.> Et arguitur quod non, quoniam cuius est considerare ens, eius est considerare modos entis; metaphysicus considerat ens; ergo considerat modos entis. Modi enim entis sunt praedicamenta; ergo praedicamenta non erunt de consideratione logici, sed potius de consideratione metaphysici. <2.> Oppositum arguitur. Logicus considerat secundas intentiones; praedicamenta autem sunt supra quae fundantur secundae intentiones; ergo etc. <3.> Ad hoc dicendum quod de praedicamentis possumus loqui dupliciter: aut secundum sui entitatem et essentiam, et sic sunt de consideratione ipsius metaphysici; aut secundum quod in ipsis fundantur secundae intentiones, et sic ea logicus considerat. <1.–2.> Argumenta autem procedunt suis viis.'

[30] Anonymus Matritensis, *Quaest. Cat.* (Anonymous 1988, 125): Consequenter quaeritur cui conveniat scientia de praedicamentis. <1.> Et videtur quod metaphysico, quia cui pertinet considerare ens, et partes entis; sed metaphysico pertinet considerare

In the 1290s Radulphus Brito treats the matter at some length. He agrees with Peter of Auvergne, and mentions the intentions of sayable, genus, species, most general, most special, and individual as examples of intentions founded on the categories.[31]

As far as I can see, no thirteenth-century schoolman seriously contemplated removing the *Categories* from the list of essential logic books.

Conclusion

Generally, 13th-century authors identify the field of logic with the field covered by the *Organon*. They are not bothered by the fact that some matters treated there are also treated in non-logical authoritative books. Manlius Boethius had claimed that grammar and logic both deal with language, but in quite different ways, and so differences in their way of treating the linguistic material need not amount to incompatibility. In much the same way, 13th-century people could calmly admit that language-bound phenomena had a prominent role in both disciplines without this creating problems for the demarcation of the borderline, for the role played by the same linguistic phenomena in the two disciplines was always different. The logician does not *qua* logician judge if a sentence is grammatically OK, but if he gets a bad sentence he will for a while exchange his logician's mortar board with the one

---

ens, ut apparet quinto Metaphysicae; ergo etc. <2.> Item arguitur quod dialectico, quia dialectica est de secundis intentionibus adiunctis primis, ut dicit Avicenna; sed praedicamenta nominant mihi secundam intentionem adiunctam primae; ergo etc. <3.> Dicendum ad hoc quod praedicamenta possunt dupliciter considerari. Uno modo inquantum sunt entia, et sic pertinent ad metaphysicum. Alio modo inquantum sunt res praedicamenti subiectae intentioni et secundum quod sunt res subicibiles vel praedicabiles, et ut hoc superius, istud vero ut inferius; et sic pertinet considerare de hiis ad dialecticum. Vel inquantum sunt principium motus et quietis, et sic pertinent ad naturale<m>. Et sicut dico de homine, ita dico de quolibet alio existente in praedicamento. Argumenta procedunt suis viis.

[31] Radulphus Brito, *Quaest. Cat.* qu. 2, ms Bruxelles, BR 3540–47: 70v–71r: 'Dicendum quod praedicamenta possunt considerari dupliciter: uno modo ut sunt res extra animam existentes, alio modo considerantur ut supra ipsa fundantur intentio generis et speciei, generalissimi et subalterni. Tunc dico ad quaestionem duo. Primo quod scientia de praedicamentis secundum quod sunt entia realia non pertinet ad logicum. Secundo dico quod determinare {-i *B*} de istis praedicamentis ut supra ipsa fundantur intentiones secundae pertine[n]t ad logicum. […] Modo supra praedicamenta fundantur intentiones secundae, sicut intentio dicibilis, intentio generis et speciei, generalissimi, specialissimi, et individui et sic de aliis. Ad logicum spectat considerare de istis praedicamentis ut supra ipsa fundantur intentiones secundae.'

he has for being a grammarian, and in his capacity as grammarian he will reject the ill-formed sentence and forbid it to journey into the land of logic or anywhere else, after which follows an instant change of mortar board, and in his capacity of logician he says, 'Thanks a lot, grammarian, I have to trust that the input I receive is grammatically well-formed.'

So, the border-disputes between logic and grammar never developed to a point where war was imminent. As I pointed out in 1981, there had been a serious crisis in the late twelfth century, when some people tended to confuse grammatical congruity with logical decidability because incongruity is one among the reasons why it may not be possible to decide whether an utterance is true or false, but to the best of my knowledge, such confusion is absent from the thirteenth century.

Border-disputes with the real sciences, primarily metaphysics, though regularly noted, were also amicably composed through the device of saying that the logician and the 'realist', if I may call him thus, are once again looking at the same matter from different angles, with different purposes. As it was commonly agreed, and made very explicit by modist authors, that logical notions have a foundation in reality, even the affinity of *Liber prædicamentorum* to metaphysics was not considered a serious problem. The one person who ought, perhaps, to have been shocked by the book's mix of logic and ontology was Boethius of Dacia, whose insistence on separating the various disciplines ought to have made him complain that Aristotle could at least have been so kind as to warn his readers when he was wearing which of his mortar boards. As things are, we do not know how Boethius of Dacia reacted to the *Categories*, but even he is not likely to have had the courage to suggest the book's removal from logic.

As far as I can see, even the important innovations in scholastic logic were not considered by anyone as breaking new ground, but only as a technically more advanced tilling of the field already acquired for logic by Aristotle. The idea of conquering new land by incorporating rhetoric and poetics remained an idle idea that nobody tried to put into practice.

So what was logic about for these men? I'm afraid it was about just the thing they usually say, with or without adding some higher theory about second intentions, ways of knowing or whatnot. It was about syllogizing, about being able to construct good arguments and detect bad ones. Aristotle, they thought, had realized as much, and also that

this meant that he would have to treat not only of the several sorts of syllogistic reasoning, but also of their integral parts – terms and propositions, that is.

Several scholars nowadays try to soften up the borders between medieval philosophy and theology. When it comes to logic in the thirteenth century I believe there is a fairly impenetrable wall, at least between logic and theology. It was not yet fashionable to propagate some fancy *logica divina* with different rules from those of ordinary logic, and in the few cases in which logicians felt they had to take theology into account, they did so with loud misgivings, as when they had to find an excuse for accidents that floated in the air with no substantial support.[32] Of, course, this unfortunate conflict arose in the field of the categories, which everyone knew was shared property with metaphysics – but metaphysics understood as mundane ontology, not as theological ontology.

There was little disagreement that the *subiectum attributionis* of logic was syllogism or more generally inferences and the ways to articulate them and detect fallacious inferences. This, I submit, explains a lot. The medievals could themselves see all their medieval novelties as contributing to that aim, and so as not leaving the field of logic as delimited by Aristotle.

In practice, the combination of *logica utens* in the sense of application of logical rules in the real sciences, and of disputational procedures felt to belong to logic – though perhaps sometimes developed in other surroundings – could only strengthen the feeling that logic had a field of its own.

More than a hundred years after the period I have been talking about, in 1438, a theologian speaking *in aula* in Leipzig on the occasion of his becoming a master of divinity, expressed the relation between logic and theology as follows:

> About Lady Theology it is written in *Esther* <15.5–7> that she took two maids with her, and upon one of them she leaned, as if for delicateness and overmuch tenderness she were not able to bear up her own body, whereas the other maid followed her lady, bearing up her train flowing on the ground. On the moral reading, the first of these maids is the science of the philosophers, whereas the second is the law of the popes and the emperors. Upon the first, holy theology, though being

[32] Cf. Donati 2001 and Ebbesen 2001: 464–465.

> self-sufficient and robust, pretends to be leaning for delicateness, and uses in the way she pleases what they say and their manners in speaking, opposing, answering, proving and disproving, not out of necessity but for delicateness.[33]

I think this sums up the matter pretty well. The theologian is aware of the importance of the disputational practice for his own work, he sees that part of his own methodology as a loan from philosophy, and more specifically from logic, but is fully aware that he also does things no logician could endorse qua logician. The logician, for his part, may try a number of strategies to define his field, but syllogizing in a disputation is what it is all about.

[33] Christophorus (Cristoferus) de Holmis (= Stockholm, Sweden), *Disputatio in aula*, Leipzig 1438, ed. Alexander Andrée (forthcoming): 'De ista domina theologia figurative scribitur Hester viii quod *assumpsit* sibi Hester *duas famulas et super unam quidem innitebatur quasi pre deliciis et nimia teneritate corpus suum ferre non sustinens. Altera autem famularum sequebatur dominam defluencia in humum indumenta sustentans.* Moraliter prima istarum est sciencia philosophorum; secunda est lex pontificum et imperatorum. Supra primam sacra theologia, cum sit sibi ipsi sufficiens et robusta, pre deliciis tamen similat se inniti et dictis et modis eorum loquendo, opponendo, respondendo, probando et inprobando, non pro necessitate sed pro deliciis utitur sicut placet.'

TWO *SUMMULAE*, TWO WAYS OF DOING LOGIC: PETER OF SPAIN'S 'REALISM' AND JOHN BURIDAN'S 'NOMINALISM'

Gyula Klima

The two *Summulae* mentioned in the title are Peter of Spain's *Summulae Logicales*, written by the realist master sometime in the first half of the 13th century, and the monumental *Summulae de Dialectica* of John Buridan, written by the nominalist master about a century later. Although the latter work is ostensibly written as a commentary on the former, the doctrine expounded in the latter is sometimes diametrically opposed to the doctrine of the former. As Buridan noted in his preface:

> I have chosen to deal in particular with that short treatise of logic which the venerable professor master Peter of Spain composed a while ago, by commenting on and supplementing it; indeed, occasionally I am going to have to say and write things that differ from what he has said and written, whenever it appears to me suitable to do so.[1]

In what follows, I will examine in some detail exactly how the doctrines expounded in the two *Summulae* differ from one another, thereby hoping to shed some light on the general issue of what *the real difference* between medieval realism and nominalism consists in. Indeed, since that *real difference* will turn out to be not so much a difference in ontology, as in two paradigmatically different ways of constructing semantic theory, this discussion will also provide an opportunity for some abstract speculation on the nominalism/realism distinction in general. But in order to engage in this sort of speculation, it will be useful to introduce some general terminology.

If by 'the adverbialization of semantics' we mean the transition from a semantic theory that relates different syntactical categories to different ontological categories to one that relates different syntactical categories to the *same* ontological categories but *differently* (here is the adverb), then, as we shall see, we can plausibly claim the following:

---

[1] John Buridan 2001, 4.

1. Buridan's nominalism is obtainable by the adverbialization of Peter of Spain's semantics.

Indeed, this comparison will easily prompt the obvious generalization of this claim:

2. Nominalism is obtainable by the adverbialization of realist semantics.

Furthermore, since the adverbialization of realist semantics as understood here can cover a broader or narrower range of syntactical and ontological categories, I will also consider some instances of the following obvious corollary:

3. Nominalism comes in various degrees.

If, in accordance with this possible 'gradation' of nominalism, we understand the terms 'nominalism' and 'realism' as designating two extremes of a range of theoretical possibilities with all sorts of intermediaries in between, then we can immediately see what motivated the introduction of the qualifiers 'extreme' and 'moderate' by historians of medieval philosophy, as they were trying to compare and classify medieval theories, which upon closer look always prove to differ in such subtle detail that cannot possibly be captured by the crude classifications of 'nominalism', 'realism' and 'conceptualism'.

As the precise 'gauging' of Peter of Spain's realism and Buridan's nominalism within this theoretical framework will reveal, their theories are in fact better characterized as fundamentally different versions of *conceptualism*. These considerations will finally give rise to the following, tentative generalization:

4. Medieval realism and nominalism are just different versions of conceptualism, differing especially in how they handle the problems of describing and identifying *mental content*.

But instead of wasting more time on issues of terminology, let us just get down to what would count in this framework as one extreme of this range of theoretical possibilities, the one that we might even call 'extremely extreme realism', and see where Peter of Spain's actual semantics and ontology would be on the scale relative to this theoretical extreme.

'Extremely Extreme Realism'

In accordance with the foregoing, 'extremely extreme realism' would be the kind of semantic theory in which different syntactical categories distinguished in terms of their different semantic functions would be taken to be in a one-to-one correspondence with different ontological categories, given that the different semantic functions of the different syntactical categories would be explained precisely in terms of being related to entities in those different ontological categories. Thus, if in this framework we would take singular and common terms to belong to different syntactical categories on account of the different semantic functions they have, then we would take this difference to consist in the fact that terms in these different syntactical categories signify entities in different ontological categories: to put it simply, singular terms are singular because they signify singular entities, whereas universal terms are universal because they signify universal entities. Thus, by the lights of this theory, the singular name 'Socrates' would be singular because it signifies the singular man Socrates, whereas the universal term 'man' would be universal because it would signify a universal entity, the universal man or human nature, or in modern times the so-called 'abstract entity', the 'property' of being human, perhaps, properly referred to by the name 'humanity'. By contrast, a 'not so extremely extreme' realist theory would say, for instance, that the difference in the semantic functions of singular and universal terms would not consist in the difference of the type of entities they signify, but rather in the *different ways* of signifying the *same* type of entities.

Again, if an 'extremely extreme realist' theory distinguishes between the semantic functions of different kinds of categorematic terms, then the distinction would be made in terms of the different types of entities these terms are supposed to signify, along the lines of an extremely realist interpretation of the Aristotelian doctrine of the categories, exemplified, perhaps uniquely, by Pseudo-Campsall, the extremely realist author of the aptly titled *Logica realis et valde utilis contra Ockham*.[2] Thus, for an 'extremely extreme realist', *simple* terms in the categories of substance, quantity, quality, relation, action, passion, time, place, position and habit would be sorted into these different

[2] Pseudo-Campsall 1982, see, e.g., 351–365.

categories precisely because they signify substance-, quantity-, quality-, relation-, action-, passion-, time-, place-, position- and habit-things, respectively. By contrast, a 'not so extremely realist' theory would allow overlaps between the ontological categories corresponding to distinct linguistic categories; thus, for instance, they would allow terms in the distinct categories of action and passion to signify the same motion, or they would allow some quantity, namely, the inner surface of the containing body to be the place of the located body (as for example Aquinas does).[3]

But similar considerations would apply to either explicitly or implicitly *complex* terms and propositions. For the 'extremely extreme realist', if a positive common term signifies a positive common nature, then a negative term signifies the negation of that nature. Likewise, if a positive term signifies some positive, accidental form in a subject of a determinate nature, then a privative term signifies a *privation*, namely, the lack of that positive form in a subject of that determinate nature. For instance, since the term 'sighted' signifies the power of sight in a subject of sensitive nature, the corresponding privative term, 'blind', signifies a privation, namely, blindness, the lack of this power in a subject of that nature. By contrast, a nominalist would insist that the term 'blind' signifies nothing other than what the term 'sighted' signifies: it does not signify a negative or privative entity or a privation; rather, it signifies the same positive entities, but *differently*, namely, negatively. Finally, for the realist, propositions signify another type of entity, namely, some propositional complex, variously called

[3] Aquinas, Commentary on *Metaphysics* 11, l. 9 n. 24: 'Quinto ibi, quemadmodum eadem manifestat hoc per exempla: et dicit quod una est distantia duorum ad unum et unius ad duo. Sed differt ratione. Propter quod diversimode significatur: scilicet per duplum et dimidium. Similiter una est via ad ascendendum et descendendum, sed differt ratione. Et propter hoc dicuntur hi ascendentes et illi descendentes. Et ita est de movente et moto. Nam unus motus secundum substantiam est actus utriusque, sed differt ratione. Est enim actus moventis ut a quo, mobilis autem ut in quo; et non actus mobilis ut a quo, neque moventis ut in quo. Et ideo actus moventis dicitur actio, mobilis vero passio.' Commentary on *Metaphysics* 11, l. 9 n. 25 'Sed si actio et passio sunt idem secundum substantiam, videtur quod non sint diversa praedicamenta. Sed sciendum quod praedicamenta diversificantur secundum diversos modos praedicandi. Unde idem, secundum quod diversimode de diversis praedicatur, ad diversa praedicamenta pertinet. Locus enim, secundum quod praedicatur de locante, pertinet ad genus quantitatis. Secundum autem quod praedicatur denominative de locato, constituit praedicamentum ubi. Similiter motus, secundum quod praedicatur de subiecto in quo est, constituit praedicamentum passionis. Secundum autem quod praedicatur de eo a quo est, constituit praedicamentum actionis.'

an *enuntiabile* (nearly all 12th and 13th century authors), a *dictum* (Peter Abelard and others), a *complexe significabile* (most famously Gregory of Rimini and Adam Wodeham) a *real proposition* (Walter Burley), or even in modern times a *fact* or more commonly a *state of affairs*. For the nominalist, by contrast, propositions signify nothing other than what their terms signify, but *differently*: not simply, but in a complex manner.

Peter of Spain's Realism

After this, no matter how sketchy, survey of 'extremely extreme realism', as a mere theoretical alternative, we may have a better chance of 'gauging' Peter of Spain's actual realism. As should be clear from this survey, one really does not have to be a nominalist to be relatively far removed from this 'extremely extreme realism'. For instance, an 'ordinary moderate realist' such as Aquinas, would certainly disagree with the extreme realist on the difference between the signification of singular and universal terms; in fact, Aquinas insists in many places that accounting for the universality of our universal terms on the basis of the universality of the things they signify is the Platonic error of confusing *modi significandi* and *modi essendi*. Thus, in his own account, Aquinas 'adverbializes' the relevant semantic relation, pretty much like a nominalist would, by saying that a universal term is universal not because it signifies a universal thing, for there is no such a thing, but because it signifies things in a *universal manner*.[4]

[4] '…nunc sermo est de vocibus significativis ex institutione humana; et ideo oportet passiones animae hic intelligere intellectus conceptiones, quas nomina et verba et orationes significant immediate, secundum sententiam Aristotelis. Non enim potest esse quod significent immediate ipsas res, ut ex ipso *modo significandi* apparet: significat enim hoc nomen homo naturam humanam in abstractione a singularibus. Unde non potest esse quod significet immediate hominem singularem; unde Platonici posuerunt quod significaret ipsam ideam hominis separatam. Sed quia hoc secundum suam abstractionem non subsistit realiter secundum sententiam Aristotelis, sed est in solo intellectu; ideo necesse fuit Aristoteli dicere quod voces significant intellectus conceptiones immediate et eis mediantibus res.' Commentary on *De interpretatione* 1, l. 2, n. 5. Cf. '…dico quod ea quae pertinent ad rationem speciei cuiuslibet rei materialis, puta lapidis aut hominis aut equi, possunt considerari sine principiis individualibus, quae non sunt de ratione speciei. Et hoc est abstrahere universale a particulari, vel speciem intelligibilem a phantasmatibus, considerare scilicet naturam speciei absque consideratione individualium principiorum, quae per phantasmata repraesentantur. Cum ergo dicitur quod intellectus est falsus qui intelligit rem aliter quam sit, verum est si ly aliter referatur ad rem intellectam. Tunc enim intellectus est falsus, quando

By contrast, Peter of Spain seems to be *really* close to the theoretical position of the 'extremely extreme realist'. Indeed, in his description of signification, he just states flat-out that categorematic terms have to signify either singular or universal things.[5]

According to Peter, signification is the conventional representation of some thing by an utterance. Therefore, only those terms have signification that signify some thing, i.e., categorematic terms. Indeed, Peter goes on to argue that since every thing is either particular or universal, and syncategorematic terms, such as 'every', 'some', etc., do not signify either a universal or a particular thing, they do not signify any thing, and so they do not have signification in this strict sense.[6] Nevertheless, as we shall see, this does not mean that these terms are absolutely meaningless. In fact, Peter will argue that although such terms do not signify things, they do signify certain modes of the things signified by categorematic terms. For now, however, we should just note Peter's unabashed talk about universal things in this argument.

Peter divides signification into the signification of substantive things, performed by substantive nouns, and the signification of adjective things, performed by adjective nouns or verbs. Again, Peter insists that this distinction does not characterize *modes of signification*, but *modes of things*.[7]

Whatever these things and their modes are, Peter states that it is on account of the difference between these two types of signification that we have to distinguish between *supposition* and *copulation*.

---

intelligit rem esse aliter quam sit. Unde falsus esset intellectus, si sic abstraheret speciem lapidis a materia, ut intelligeret eam non esse in materia, ut Plato posuit. Non est autem verum quod proponitur, si ly aliter accipiatur ex parte intelligentis. Est enim absque falsitate ut alius sit *modus intelligentis in intelligendo*, quam *modus rei in existendo*, quia intellectum est in intelligente immaterialiter, per modum intellectus; non autem materialiter, per modum rei materialis.' *Summa Theologiae* I, q. 85 a. 1 ad 1.

[5] The following summary of Peter of Spain's semantics partly derives from Klima 2003, 526–31.

[6] Peter of Spain 1972, 79: 'Significatio termini, prout hic sumitur, est rei per vocem secundum placitum representatio. Quare cum omnis res aut sit universalis aut particularis, oportet dictiones non significantes universale vel particulare non significare aliquid. Et sic non erunt termini prout hic sumitur 'terminus'; ut sunt signa universalia et particularia.'

[7] Peter of Spain 1972, 80: 'Quare proprie non est significatio substantive vel adiectiva, sed aliquid significatur substantive vel adiective quia adiectivatio vel substantivatio sunt modi rerum que significantur, et non significationis.'

Supposition is the taking of a substantive term for something, whereas copulation is the taking of an adjective term for something, i.e., its referring to something. This is why signification is prior to supposition. Since only a term can refer, supposition (i.e., reference) can only belong to a term, that is, an utterance that already has signification.

Peter next divides supposition into discrete and common. Discrete supposition belongs to discrete terms, i.e., terms that on account of their signification can apply only to one thing, such as proper nouns, or common terms determined by a demonstrative pronoun and an act of pointing. Common supposition belongs to common terms, i.e., terms that on account of their signification can apply to several things, although, as we could see, strictly speaking, they only signify one universal thing each.

Common supposition is further divided into natural and accidental supposition. Natural supposition is the taking of a common term for all those things that fall under it, be they past, present, or future. Although Peter does not say much about this type of supposition, its significance is clear in natural science, where we want to make universal claims of natural phenomena regardless of whether they actually exist at the time of making the claim or not. For example, 'Every lunar eclipse is the interposition of the earth between the sun and the moon' should be true, even when there is no lunar eclipse. Accidental supposition is the taking of a term in a proposition for something, as determined by the propositional context.

Peter next divides accidental supposition into *simple* and *personal supposition*; interestingly, he does not deal with the third usually distinguished kind of supposition, namely, *material supposition*, when a term is taken to stand for itself. According to Peter, in simple supposition a common term refers to the universal thing it signifies. For example, in the proposition 'Man is a species' the term 'man' stands for what it signifies, namely, man in general, and not any particular man, since obviously no particular man is a species. Furthermore, the predicate terms of universal affirmative propositions also seem to have simple supposition. For example, in 'Every man is an animal', the term 'animal' cannot be taken to stand for any particular animal, for obviously no particular animal is every man.

Personal supposition is defined by Peter as the taking of a common term for its inferiors. It is divided into *determinate* and *confused* supposition, the latter of which is further subdivided into *mobile* and

immobile supposition. *Determinate supposition* is had, for example, by the subjects of particular propositions, such as 'Some man is running'. It is called determinate, for although the term 'man' stands in it for all men, it is verified for just any one of them (i.e., it is true, if this man is running, or that man is running, etc.). *Confused supposition*, according to Peter's definition, is the taking of a common term for many things, with the mediation of a universal sign. For example, the subject term of 'Every man is an animal' has *confused, mobile*, and *distributive* supposition, for the term is obviously held for all men, and, contrary to determinate supposition, the proposition is true only if the predicate is verified for all of them (i.e., it is true, if this man is an animal *and* that man is an animal, etc.).

Peter goes on to distinguish this type of confused supposition, which he calls *confused by the necessity of the sign*, from another type, which he calls *confused by the necessity of the thing*. That the subject term of 'Every man is an animal' is distributed for all men because of the universal sign 'every' is clear. But, Peter argues further, since each man has his own essence, and his own animality, the copula 'is' and the predicate term 'animal' should also be taken to stand for all those essences and all those animals, not *by the necessity of the sign*, but *by the necessity of the thing*.

The term confused by the necessity of the sign is taken *distributively*, for it is taken to stand for all men, but it has confused and *mobile* supposition, because one can 'descend' to any of its inferiors by a valid inference, such as this: 'Every man is an animal; therefore, Plato is an animal'. By contrast, the term confused by the necessity of the thing has *confused*, but *immobile supposition*, for under this term no such descent is possible: the inference 'Every man is an animal; therefore, every man is this animal' is not valid.

However, in his discussion of simple supposition it was precisely this property of the predicate term of this sentence that allowed Peter to conclude that this term had *simple* supposition. In general, Peter's criterion there to detect whether a term had simple supposition seemed to be whether under the term we could *descend* to one or another of its particulars, preserving the truth of the proposition. Apparently, the rule there was that if there is no descent under the term, then the term has simple supposition. Therefore, since there is no descent under the predicate of a universal affirmative, that predicate must have simple supposition. But now Peter just argued that this term has to have *personal*, *confused*, although *immobile supposition*, given that it

is confused by the necessity of the thing, and not by the necessity of the sign. So, which kind of supposition applies here?

Peter first addresses this problem by pointing out that attributing both simple and immobile personal supposition to the same term is not inconsistent, i.e., a term can have both, although in different respects. For it has simple supposition insofar as it stands for the nature of the genus signified by this term, but it has confused supposition insofar as the nature of the genus is multiplied in the *supposita* of the species. At least, Peter says, this is how one should answer the question, maintaining that this predicate term has confused personal supposition as well as simple supposition in this proposition.

But Peter is not satisfied with this solution, for he finds it simply impossible that a term should have confused personal supposition in the predicate position. He argues as follows. In 'Every man is an animal' a genus is predicated of one of its species. But the nature of the genus *multiplied* in the supposita of the species *is not* the genus (which is a universal, that is, something that is *one* over many, and thus *not multiplied* with the multiplicity of the many things participating in it). Therefore, it is not the nature of the genus multiplied in the supposita of the species that is predicated here. But then, since the predicate of this sentence stands for what is predicated, which is not the nature of the genus multiplied in the supposita of the species, the predicate cannot have confused supposition which would require this multiplication.

Peter's consequent rejection of the aforementioned distinction between the two types of confusion (which he found in one of his sources, cf. de Rijk, 1972, lxxi) gives us a clearer insight into Peter's semantic conception. Here he states that although from the point of view of logic the nature signified by 'man' in its supposita is one, in the nature of things each man has his own humanity, and these humanities are distinct on account of the matter they inform. Likewise, the nature signified by the term 'animal' in individual humans is one from the point of view of logic (*secundum viam logice*), but is multiplied in these individuals in the nature of things (*secundum viam nature*). So, the multiplication of animalities has nothing to do with the semantic function of the predicate of 'Every man is an animal'; indeed, in the nature of things we find the same multiplication of animalities even when we consider 'Every man is white' or 'Every man is black'.

So, perhaps surprisingly, Peter's apparently extremely realist talk about universal things need not be taken at face value. It is only the

proper way of talking for the logician, who is discussing things insofar as they are conceived by us, and consequently signified by our terms. But since we are able to conceive of singular things in a universal manner, by abstracting from their differences, and consequently we are able to signify them in the same way, the logician is entitled to talk about what our common terms signify as a universal thing, while keeping in mind that the thing in question is not a thing of nature, but merely something universally conceived and signified.[8]

To summarize Peter's conception by means of an example, the term 'man' signifies human nature in general, and this is what it stands for when it has simple supposition, as in 'Man is a species' or 'Every philosopher is a man'. But the same term stands for the individuals having this nature (each one its own), when the term has personal supposition, whether determinate, as in 'A man is an animal' or confused, mobile and distributive, as in 'Every man is an animal'. However, Peter rejects the suggestion that the predicate term of this sentence, besides having simple supposition would also have personal (confused and immobile) supposition, not because he thinks these two kinds of supposition would be incompatible, but because he argues that this predicate simply does not have the latter semantic function.

All this would squarely place Peter of Spain in the moderate realist position concerning the problem of universals. However, there is more to Peter's realism. If, in accordance with the foregoing, we take an 'extremely extreme realist' to be someone who is willing to allow a one-to-one mapping of linguistic categories to ontological categories, then Peter will still appear to be at least a 'really extreme realist' in this sense. To be sure, his realism is certainly mitigated by his distinction between what one can talk about *secundum viam logice* and what there really is *secundum viam nature*. Nevertheless, the way he talks about substantive and adjective things, and especially about the signification of syncategorematic terms, is revealing. The things he is talking about may not be things of nature pure and simple, but things-as-conceived-and-signified. But then, as far as Peter's semantics is concerned, there might be (almost) just as many such 'quasi-things' as there are different ways of signifying the things of nature.

[8] Cf. also Peter of Spain 1992, 46–49 and 104–105.

This is quite clear not only in Peter's distinction between the adjective and substantive things referred to above (which after all reflects a genuine real distinction between substances and accidents), but especially in his treatment of the signification of syncategorematic terms and of propositions. As far as the latter are concerned, he does not hesitate to talk about what is signified by a proposition, and referred to by the corresponding sentential nominalization, as a thing, which may have its own accidents. For example, in the *Summulae* at one point he describes *Antichristum non fuisse*, i.e., 'that the Antichrist was not' as a thing that now has the accidental property of being true in the future, whence now it has the accidental property of being possible, and later, after the advent of the Antichrist, it will have the accidental property of being impossible, by the necessity of the past. So, his argument goes, even if the thing that is now possible (because it will be true) will be impossible, and so the thing that will be impossible is now possible, it does not follow that the impossible is possible, i.e., that the impossible can be true.[9]

As for syncategorematic terms, Peter both in the last tract of the *Summulae* and in the *Syncategoreumata* insists that although syncategorematic terms do not signify subjectible and predicable things, which are signified by categorematic terms, nevertheless, they do signify *certain modes of these things*. To be sure, he adds, these modes do not belong to these things as they are in themselves, but insofar as they are subjectible or predicable, which is why they need not stick with their things in syllogisms in different propositions. For example, consider

> Every white man is running
> Socrates is a white man
> ---
> Socrates is running

In this syllogism, the disposition 'white' of the subject 'man' belongs to the thing in itself, so it has to be repeated in the other premise in order to get a valid inference. However, the further disposition 'every' need not be repeated (i.e., we do not have to assume 'Socrates is every white man' as the second premise) in order to obtain a valid inference. In Peter's view, this is because 'every' signifies a disposition that

[9] Cf. Peter of Spain 1972, 195.

determines the subject insofar as it is the subject in relation to the predicate, for it signifies that the predicate applies to all supposita of the subject.[10]

Again, in the subtle discussion of exclusive particles, such as 'alone' and 'only', Peter raises the question whether these signify exclusion. However, exclusion also seems to be signified by the noun 'exclusion' and the verb 'exclude', which are clearly not exclusive particles, so what makes the difference? The important thing Peter notes is that this noun and this word *signify* exclusion, whereas the exclusive particles *exercise* it. So, in accordance with the doctrine of the *Summulae* noted earlier, these syncategorematic terms do not signify what the categorematic terms signify, i.e., they do not signify any particular or universal thing. However, in a broader sense they do signify something, namely, certain dispositions or modes of things as conceived by means of the complex expressions involving these syncategorematic terms. In particular, as Peter says:

> …an exclusive word removes the connection a whole has with its part on account of its very meaning. Therefore it is said to signify a privation of the connection a whole has with a part. Now from this privation follows the exclusion of all others, just as a proper act follows from that by which it is carried out. Hence exclusion is brought about by an exclusive word not as conceived of, but as carried out.[11]

So, these particles do signify something in the things conceived by the categorematic terms: in this case, a particular privation, namely, the privation of the association of the thing or things excepted with the rest of the things under the subject insofar as they fall under the subject, on account of which the rest are excluded, by means of an act of exclusion carried out, but not signified, by the exclusive particle.

To summarize, for Peter, even syncategorematic terms and the complex phrases they help to form, such as complex terms or propositions, have their distinct semantic values. To be sure, these semantic values are not to be identified with the mind-independent things making up the natural world; rather, they are to be regarded as the mind-dependent dispositions of these things as-they-are-conceived. Viewed from this perspective, Peter's realism may appear to be *very* close to the theoretical position of 'extremely extreme realism', except, perhaps,

[10] See Peter of Spain 1972, 212.
[11] Peter of Spain 1992, 106–109.

somewhat *mitigated* by assigning an ontologically diminished status to the items signified by universal categorematic terms, by syncategorematic terms, and the complexes they make up.

Buridan's Nominalism

In contrast to this picture, Buridan's nominalism would seem to be rather close to the other end of our theoretical scale. As is well-known, he allows individual entities only in three distinct ontological categories, namely, substance quantity, and quality. In his semantics, therefore, all linguistic items in semantically distinct syntactical categories are to be mapped onto these entities.

Thus, when he has to account for the semantic difference between singular and universal terms, Buridan at once appeals to the difference in the representative function of the corresponding concepts, which, in turn, he simply characterizes as the difference *in the ways* in which they represent individual things. Accordingly, when he considers the question 'whether the intellect understands the universal before the singular or vice versa', he clarifies the question in the following way:

> …since apart from our soul, that is to say, outside it, there is no universal horse distinct from a singular horse or singular horses, nor a universal stone apart from singular stones, and likewise for other things (as we suppose on the basis of *Metaphysics* VII), the proposed question must be properly worded: whether the intellect understands the same things or the same thing universally, that is, according to a common concept, before it understands singularly, that is, according to a singular concept, or vice versa.[12]

Thus, Peter's talk about signifying universal things is replaced by Buridan with talking about the representation of the universal concept to which a universal term is subordinated, and which, in its turn, is universal because it represents *universally* the same singulars that are signified by singular terms *singularly*. Here we can clearly see Buridan's 'adverbialization' at work.

Again, for Buridan, and *contra* Peter of Spain, the difference between adjectives and substantives or even 'substantivated' adjectives is not to be found in the difference in the things they signify, but in *how*

[12] Zupko 1989, 288, quoting from the translation given in his PhD dissertation (Cornell, 1989—p. 64): Buridan, *Quaestiones de anima* 3, lb. 3, q. 8.

they signify the same things. For instance, the term 'albus' and the term 'albedo' both signify individual whitenesses only, but *differently*, because 'albus' signifies them as adjacent (i.e., pertaining) to a substance, whereas 'albedo' signifies them not as adjacent to a substance.

But the same can be observed in Buridan's treatment of negative or privative terms, where he insists that these do not signify negations or privations, indeed, they signify nothing other than what the corresponding positive terms signify. Thus, for instance, the term 'blind' signifies animals connoting their sight, just as the term 'sighted' does. However, since it connotes this sight *negatively*, in a propositional context 'blind' will obliquely refer to this sight as non-adjacent to the animal, and so it will *supposit* precisely for those animals that lack sight.

Likewise, when it comes to propositions, Buridan insists that these do not signify some *complexe significabilia* distinct from the things signified by their categorematic terms, but they signify the very same things, except in a *complex manner*. As Buridan remarks:

> …[The proposition] 'God is God' externally signifies only God, for the word 'is', taken precisely as a copula, signifies nothing externally apart from the significations of the categorematic terms, given that it signifies only the complexive concept by which the intellect forms propositions from the terms 'God' and 'God'.
>
> But now there is a difficult question: for it was said earlier that by every concept something is conceived. What then, is conceived by the complexive concept corresponding to the copula 'is', when I say 'God is God' or 'A man is a stone?'
>
> I reply that…since the intellect cannot form that complexive concept without the categorematic concepts that it combines, nothing is conceived by that concept alone. But we conceive the very same things in a complex manner by means of the categorematic concepts as those which were conceived in an incomplex manner by those categorematic terms *without* that complexive concept. Therefore, different things are not conceived by the concepts corresponding to the various expressions 'God is God', 'God is not God', 'Every God is God', 'No God is God' and to the term 'God'; rather, that thing is conceived in different ways, namely, in a complex or incomplex manner, and affirmatively or negatively. So, coming back to the solution of the sophism, I say that although the expression 'God is God' signifies more in the mind than the name 'God', nevertheless, it signifies nothing more outside [the mind], but entirely the same [thing], although in a different manner.[13]

[13] *Sophismata*, c. 1, to the 3rd sophism (John Buridan 2004).

There are two important points to note in this passage. First, what accounts for the adverbialization of semantic relations in semantically complex expressions is the explicit or implicit presence of syncategorematic terms, subordinated to syncategorematic concepts. Second, again, *contra* Peter, there is nothing 'outside the mind' conceived by these concepts, not even some mind-dependent *modes* of the things conceived by the categorematic terms. Syncategorematic concepts are nothing but the modes of conceiving and signifying themselves, *not representing* anything, but simply *exercising* the function of modifying the semantic relations of those concepts with which they are construed. Note here the difference from Peter, for whom the *exercise* of exclusion was the *result* of *signifying* a privation! As Buridan explicitly claims:

> …the copulas 'is' and 'is not' signify different ways of combining mental terms in order to form mental propositions, and *these different ways [of combining] are in their turn complexive concepts* pertaining to the second operation of the intellect […] And so also the words 'and', 'or', 'if', 'therefore' and the like designate complexive concepts that combine several propositions or terms at once in the mind, but signify nothing further outside the mind. These words are called purely syncategorematic, because they signify nothing outside the mind, except along with others, in the sense that the whole complex consisting of categorematic and syncategorematic words does signify the things conceived outside the mind, but this is on account of the categorematic words.[14]

Conclusion: the Conceptualisms of Peter of Spain and Buridan and Some General Methodological Lessons

So, what is 'the big difference' between Peter's and Buridan's respective accounts? At first sight, it may indeed seem that it is primarily a big difference in the ontologies required by their respective semantics. Whereas Buridan's semantics maps all distinct syntactical categories to three ontological categories of individuals, but in many different ways on account of the complexities of the mental language mediating between spoken language and reality, Peter's semantics apparently posits different ontological categories for each semantically distinct

[14] John Buridan 2001, § 4.2.3.

syntactical category, accounting for their differences in terms of the ontological differences of the things to which they are related.

However, if we take a closer look at the 'things' in Peter's ontology, we should realize that it would be quite unjustified to identify him as the sort of 'extremely extreme realist' described at the beginning of this paper. After all, even if Peter is willing to talk about what is represented by *syncategoremata* as being certain *modes of things*, nevertheless, these modes are *not* taken by him to be *things*, properly speaking, in the first place, and even the 'things' of which these are the modes, are only *things-as-conceived*. Therefore, these modes themselves, pertaining to these things-as-conceived, are rather *the ways* in which things-in-themselves are conceived, where, of course, we must not forget about Peter's willingness to distinguish talking about things-as-conceived *secundum viam logicae* as opposed to talk about things-in-themselves, *secundum viam physicae*. Accordingly, as far as his semantics is concerned, Peter might as well have an ontology of things-in-themselves just as parsimonious as Buridan's, as long as he is allowed keep talking about his things-as-conceived, *secundum viam logicae*.

To be sure, by this I do not mean to suggest that *as a matter of fact* there are no important differences between Peter's and Buridan's ontology of things-in-themselves *secundum viam physicae*; indeed, there certainly *are*. All I am saying is that it is not *that difference* that would make their semantics radically different. Rather, what makes the fundamental difference is Peter's very strategy of inserting this intermediary layer of *things-as-conceived and their modes* into his account, or indeed, since he came later, Buridan's efforts to do semantics *without* this inserted layer.

If, in conclusion, I may risk a bit of speculation about *this* difference, I would say the following. Peter's talk about things-as-conceived and their modes corresponding to syncategoremata is Peter's way of articulating an essentially *intensional*, or indeed *intentional*, logic, trying to characterize the semantic content of all our concepts that render our utterances meaningful in terms of their direct and immediate objects: whatever it is that we directly and immediately conceive by these concepts. But these direct *objects-of-our-thought* are not taken to be *objects simpliciter*: they rather just provide the representational content of our concepts, which variously determine the ways things-in-themselves are supposed to be if our concepts are to apply to them. So, Peter's things-as-conceived and their modes provide the objec-

tive (in the medieval sense of 'objective') information content of our acts of thought, specifying the conditions of veridicality of these acts of thought, expressed in our language. For instance, in the case of a privative term, expressing a privative concept, such as the concept of 'blind', this type of approach requires specifying first what it is that is immediately and directly conceived by this concept, which of course would be identified as a privation, a quasi-entity, the absence of sight, the presence of which, *secundum viam logicae*, of course, is conditioned on the missing of sight in an animal *secundum viam physicae.*

By contrast, Buridan's approach would represent an essentially *extensional* logic, which would simply abandon the idea that semantics needs to be done in terms of specifying the information content of our thoughts determining the conditions of their veridicality. Our categorematic concepts are directly mapped onto the things of nature, but variously, on account of the merely modifying, but non-representative function of syncategorematic concepts.

So far so good, if the foregoing is correct. But then, can Buridan really afford to do semantics without specifying the 'information content' of all our concepts? He certainly *can* account for the semantic differences between complex concepts in terms of their different compositional structure. And he can also distinguish extensionally between different simple concepts on account of the different extensions of their signification or their different connotations, if they are necessarily coextensive, as is the case with transcendental concepts (see the beautiful discussion of this in the *Sophismata*, where this is clearly Buridan's main concern). But what accounts for the different extensions of different simple absolute concepts? Since these extensions are potentially infinite, they cannot be specified by enumeration, and since they are not hodge-podge collections, but natural kinds, it is natural to think of them as different on account of meeting some different *intensional criteria*. But those are precisely that Buridan cannot have, if he is to stick to his purely extensional, Ockhamist semantics, which, as I have argued elsewhere, leads to a fundamental conflict between his logical semantics and cognitive psychology.[15] On the other hand, these intensional criteria are precisely the primary objects dealt with by Peter of Spain and his ilk, very much in accordance with their

[15] Klima 2009, especially 99–103, 265–266.

Aristotelian cognitive psychology, even if at the expense of *apparently*, but *not really*, endorsing a 'weird' ontology.

But however the case may be with the relative merits and demerits of Peter's and Buridan's approach, I think on the basis of the foregoing discussion we can quite safely draw the following methodological lessons for ourselves:

1. When a medieval ('realist') logician talks about 'universal things' we should not take this sort of talk at face value, as expressing a commitment to universal entities in the author's 'core ontology', for the author may simply talk about universals *secundum viam logicae*.
2. In medieval logic, *pace* Quine, 'ontological commitment', is *not* a matter of 'quantifying over'. For even medieval *nominalists* would quantify over mere possibilia without ever worrying about thereby 'overpopulating' their ontology. In medieval logic, ontological commitment is rather the question of the true predicability of the notion of *real being*.
3. Accordingly, if various senses and/or modes of being are allowed, as in the ontologies of most medieval 'realists', then the issue of 'ontological commitment' becomes far from unambiguous. For even an author with an 'insanely' populous 'universe of discourse' (as Peter of Spain) may have a very neat and tidy *universe* of real entities, which are the only *things* we are supposed to take seriously *secundum viam naturae*.
4. Finally, the metaphysically harmless bourgeoning of quasi-entities in one's 'universe of discourse' may actually be just good semantic strategy for developing a fine-grained, distinctive, intensional semantics, unhindered by the somewhat 'premature' ontological worries of the metaphysician.

THE SCOPE OF LOGIC: SOTO AND FONSECA ON DIALECTIC AND INFORMAL ARGUMENTS

E. Jennifer Ashworth

Scholars have frequently made large claims about changes in logical method between the late middle ages and the sixteenth century, which, they say, altered the very nature of dialectic.[1] In a recent book, Hannah Dawson speaks of 'the rhetoricisation of logic by Agricola, Ramus and Talon, whereby *inventio* (discovery of arguments) and *dispositio* (judicial arrangement of arguments) were moved from rhetoric into logic.'[2] Other authors, notably Lisa Jardine, have argued that the impact of humanist dialectic went even further.[3] She claims that logic was replaced by dialectic as a logic of probability rather than certainty, that the syllogism was demoted to the status of one argumentative strategy among others, and that there was a new focus on informal arguments, both through a renewed interest in the Topics and through the rediscovery of such classical argument forms as *sorites*, the heap argument.

These claims are difficult to substantiate, for two reasons. First, one can argue that the so-called rhetoricisation of logic was simply the insistence that rhetoric itself be drained of any content that overlapped with logic. Rudolph Agricola, whose *De inventione libri tres*, written around 1479, was first published in 1515, left matters of eloquence to the rhetorician, and kept anything to do with the Topics, with argumentation, or with the ordering of discourse for the logician. It is true that the attention to method and the ordering of discourse was new, but invention and judgment had always been the concern of the logician, as had been the dialectical (as opposed to the rhetorical) Topics. How far the material absorbed included informal persuasive devices remains to be seen. However, we should note that, so far as the Topics are concerned, the changes brought about by Agricola, and later by

[1] For a full discussion of this introductory material and further references, see Ashworth 2008, 609–43.

[2] Dawson 2007, 66.

[3] Jardine 1983, 253–86; Jardine 1988, 173–98.

Petrus Ramus, actually broke their link with arguments, both formal and informal, by treating them solely as headings under which material can be organised.

Second, the impact of humanism brought about differences in the type of logic textbook available, insofar as specifically medieval material was rejected by many sixteenth-century logicians, and much more emphasis was placed on clarity of language and the use of classical examples. This meant that in a simplified logic manual there was no discussion of types of conditional statement or of types of consequence, any more than there was serious discussion of the standard four kinds of argumentation. Accordingly, if one wants to find a principled account of formal argumentative devices, together with some discussion of whether or not there are legitimate informal argumentative devices, the place to look is in those longer, more scholastic, textbooks that retain at least some medieval material and that show the influence of humanism mainly in their attention to the Greek texts of Aristotle and his early commentators.

It is for this reason that I have chosen to examine two sixteenth-century Iberian scholastics, the Spaniard Domingo de Soto (1494–1560) and the Portuguese Petrus Fonseca (1528–1599), in order to see whether the changes in logical method brought about by the supposed influence of humanism are apparent. For Soto, I shall use the second edition of his *Summulae*, printed in 1539/40, because this was the version that was reprinted in Salamanca eight times, and that most successfully introduced Spaniards to earlier sixteenth-century Parisian teachings.[4] Soto's preface (f. ii r–v) shows that he had responded to humanism by simplifying and reorganizing the text of the first edition, and by removing many sophismata. However, he retained much medieval material including supposition, consequences, *exponibilia, insolubilia* and *obligationes*. For Fonseca, I shall use his popular *Institutionum dialecticarum libri octo*, which was first published in Lisbon in 1564.[5] The last of its fifty three editions appeared in Lyon in 1625. It follows Aristotle's *Organon*, taking up material from the *Categories, Perihermenias*, *Prior* and *Posterior Analytics*, *Topics* and *Sophistici*

[4] Domingo de Soto, *Aeditio Secunda Summularum*, Salamanca, 1539–1540.
Note that the foliation is often inaccurate. I am grateful to Angel d'Ors for providing me with photographs of this edition.

[5] Petrus Fonseca 1964.

Elenchi in turn, but as well as many classical references, it also contains some material about *exponibilia*, consequences and supposition.[6]

Key Notions

We need to begin by clarifying the key notions of 'dialectic', 'probability', 'argument' and 'informal argumentation'. This may seem rather elementary, but it is necessary, because some of the claims about the impact of humanist dialectic depend on a failure to make distinctions. If we start by asking what counts as dialectic and whether it differs from logic, at least three answers are possible. First, one can regard 'logic' and 'dialectic' as merely two names for one discipline, and second, one can regard dialectic as a sub-part of logic which studies dialectical syllogisms as presented in Aristotle's *Topics*. This second answer, combined with the discussion of dialectical invention or discovery by Agricola, gives rise to a supposed third answer according to which dialectic focuses on Topical discourse and debate, and hence is a part of logic primarily concerned with persuasive techniques and informal argumentation, that is, with non-deductive strategies. So far as our two authors are concerned, they both used the word 'dialectic' for the whole of logic, while not denying that it was also used to refer to a sub-part of logic. Moreover, like Aristotle, Cicero, Boethius and many others before them, they did link dialectic with discourse and disputation. Soto wrote (f. iii rb), 'Dialectic is the art or science of disputing' (*Dialectica est ars seu scientia disputandi*), and he explained (f. iii va) that the word 'dialectic' came from a Greek word meaning to dispute or discuss (*disputo vel dissero*). He then explained that the word 'logic' comes from the Greek word '*logos*', and so can mean either a rational *scientia* or a *scientia* of discourse (*sermocinalis*). In the latter sense, it includes rhetoric and poetics, but in the first sense 'logic' and 'dialectic' are interchangeable, except that logic covers any rational activity, while dialectic relates to the mind's most perfect operation, discoursing or disputing (*disserere vel disputare*). Similarly Fonseca said (1964, 20) that dialectic was the '*disserendi ratio sive doctrina*' which means that it is an art which teaches all the rules of discussion (*omnes formulas disserendi*). Hence it deals with all kinds of reasoning,

[6] For further discussion of both textbooks, see Ashworth 1988, 75–87, esp. 81–4.

using both necessary and probable arguments (1964, 22). We shall see below how far Soto and Fonseca focused on specifically Topical discourse, or on persuasive techniques and informal argumentation.

Next, we must consider the notion of probability.[7] The term itself had a fairly general meaning. A probable proposition was likely, plausible, susceptible of proof though not usually of demonstration in the strict Aristotelian sense. Unsurprisingly, no logician that I know of displayed any awareness of statistical or relative frequency interpretations, and discussion of induction was more in terms of the movement from singular premisses to a universal conclusion than of empirical investigations. Discussion of probability was both epistemological and metaphysical. With respect to epistemology, it was recognized that there are degrees of belief, and that a probable belief or *opinio* is one that falls somewhat short of certainty, while being more robust than mere *suspicio*, the special province of the rhetorician. It was also recognized that even those propositions which ought to be certain might be matters of opinion for some. As Paul of Pergula remarked, not everyone believes that God exists, even though 'God exists' was a standard example of a necessarily-true proposition.[8] With respect to metaphysics, a distinction was made between necessary and contingent beings, and between necessary and contingent causal connections. God must exist, but we need not. Some causes always produce a particular result, and some do not. Predictions about the morning's weather after a red sunset are not to be relied on, and while most mothers love their children, we cannot infer that this mother does with any certainty. This latter observation does allow for subjective probabilities, supporting a specific degree of belief in the truth of the conclusion, and whether arguments can be based on these cases will be discussed below. More usually, however, if an argument was labelled as 'probable' this had to do not with the replacement of a strict logical relation between premisses and conclusion by some other relation, but with the epistemological status of the premisses. If at least one premiss was about contingent matters, or was wrongly taken to be about contingent matters, the argument, even if deductively valid, fell into the category of probable or dialectical arguments.

Now we come to the notion of an argument, which I shall take to be just a sequence of two or more statements, of which one or more

[7] For a very useful discussion, see Daston 1998.
[8] Paul of Pergula 1961, 88.

are designated 'premisses' and exactly one is designated 'conclusion'. We might add that the premisses are intended to support the conclusion, whether they do or not. An argument is thus distinct from an entailment or implication, since some arguments are not cases of entailment, and it is also distinct from an inference, in the sense of a performance, the presentation of an actual argument by a reasoner to an audience. In ordinary situations, an argument will be acceptable only if it meets certain common sense criteria. First, the premisses and conclusion should be so related that we are not liable to be led from truths to a falsehood, or from plausible premisses to an implausible conclusion. Second, the premisses should be relevant to the conclusion, at least in the sense of being about the same subject. This criterion immediately raises a difficulty with respect to the paradoxes of strict implication. Why should we suppose that an impossible premiss allows us to infer any proposition whatsoever, or that any premiss whatsoever allows us to infer a necessary conclusion? Third, the conclusion should do more than merely repeat one premiss. This criterion too reveals a problem, since the argument 'P therefore P' seems logically impeccable while sounding very like begging the question. Fourth, the premisses should be true, or at least more probable than not. Finally, the argument should be presented as clearly and engagingly as possible. The problem of whether these criteria are met by the arguments acceptable to the professional logician is implicit in many late medieval and Renaissance discussions, though I shall not be discussing the last two criteria. There was general agreement that logic is concerned with truth, and that clarity is a prerequisite, while elegance and persuasiveness may be left to the rhetorician.

For Domingo de Soto and Fonseca, as for many others, talk about arguments was couched in terms of talk about *consequentia* and *argumentatio*. Roughly speaking, a consequence is an argument in the sense already defined, but there was considerable overlap, both with the notion of entailment or implication, since some people felt that only a valid argument could count as a consequence, and with the notion of inference as performance. Fifteenth and sixteenth-century logicians were not unaware of these distinctions. The *Dubia Pauli*, Paul of Pergula's commentary on Ralph Strode's *Consequentiae*, distinguishes three possible definitions of a consequence.[9] 1) It is a relation of the consequent to the antecedent, a definition attributed to

[9] Ralph Strode 1517, f. 45 rb.

Richard Ferrybridge, who seems to imply that the relation must be genuine.[10] This is the *consequentia* as an entailment. 2) It is an act of the intellect, such that a consequence is the inferring (*illatio*) of the consequent from the antecedent, a definition attributed to Strode and Heytesbury.[11] This is the inference as performance. 3) The so-called common definition, found for instance in Richard Billingham, that a consequence is just an aggregate of an antecedent and a consequent and a sign of inference.[12] This definition is not neutral if one supposes that the sign of inference is more than just the presence of a certain word, such as '*quia*', '*ergo*' or '*si*'. For instance, George of Brussels said that if '*consequentia*' was taken in a broad sense, '*nota illationis*' in this definition would denote that the consequent followed from the antecedent, whether it did or not, whereas in a narrow sense of '*consequentia*', the definition should include that the consequent does follow necessarily from the antecedent.[13] In the narrow sense, there can be no invalid consequences.

As we shall see in Soto, consequences were frequently identified with conditional statements, or at least with one variety of conditional statement, the illative conditional. As Peter King has hinted, there is a practical reason why conditionals and consequences are linked in medieval and post-medieval discussions, namely that an oral presentation of a consequence is naturally couched in terms of a conditional statement, 'If A and B, then C'.[14] This did not mean that no distinction was made between consequences and conditionals. For instance, the early sixteenth-century logician Juan Celaya said that unless the definition of a valid consequence excludes cases of self-reference, one will have true conditionals which are invalid consequences, as in 'If this

---

[10] Richard Ferrybridge in Pozzi 1978, 262, where he rejects a proposed consequence on the grounds that '[…] consequentia est consecutio sive relatio quae est inter antecedens et consequens cuiusmodi non est in proposito.'

[11] Strode in Pozzi 1978, 237: 'Consequentia est illatio consequentis ex antecedente […].'

[12] Richard Billingham, *Consequentiae*, MS Oxford Bodleian Lat. misc. e 100, f. 56 r: 'Consequentia est quodam ag<g>regatum ex antecedente et consequente et nota consequentie. Et sunt note consequentie scilicet 'si', 'quia', 'igitur' et 'ergo' et consimiles.'

[13] George of Brussels 1491, sig. d 7 vb and sig. d 8 rb. The latter definition reads: "Consequentia est propositio ypothetica habens explicite siue in eius mentali antecedens et suum consequens quod de necessitate sequitur ex antecedente et notam illationis illatiue et affirmatiue tentam per quam consequens denotatur sequi ex antecedente, ut 'homo currit, ergo animal currit'."

[14] King 2001, 117–45, esp. 124–5.

is a valid consequence, then a man is a lion', and valid consequences which are false conditionals, as in 'If this conditional is true, a man is an ass.'[15]

Whether every *consequentia* was also an *argumentatio* was an open question, but certainly any *argumentatio* was a *consequentia*, and, following Aristotle's *Topics* (105a10–19) and *Rhetoric* (1355a4–8, 1356a36–b12), was divided into exactly four kinds: syllogism, induction, enthymeme, and example.[16] As we shall see, Soto and Fonseca did not agree on the implications of this apparently neat division.

Whether or not the notions of consequence and argumentation leave any room for the notion of an informal argument depends on how 'formal' and 'informal' are to be defined. The first thing we need to understand is that logic was never formal in the modern sense. There was no notion of an uninterpreted system with its own set of properties, nor was there any notion of a formal interpretation such that, for instance, any proposition just says T or F. While letters such as 'a' and 'b' could be used to stand for propositions, and rules could be described in neutral language, the basic assumption was always that logic served the purpose of finding and expressing truths. That being said, one might make a distinction between formal and informal arguments in terms of deductive validity, so that an informal argument is one that is acceptable without being deductively valid. That is, it does not meet the modal criterion whereby an argument is valid if and only if it is impossible for the conclusion to be false when the premisses are true. This still leaves various possibilities open, with respect to both categories. In the case of valid deductive arguments, we need a further distinction between formal and non-formal arguments, given that we are dealing with a non-formalized object language rather than with a formalized metalanguage. Some arguments are such that their conclusion is true whenever the premisses are true, no matter what non-logical terms are substituted. That is, they meet two criteria, the modal criterion and the substitution criterion, and the type of impossibility involved will be logical impossibility. Other arguments are such that their conclusion is true whenever the premisses are true just because of the semantic link between particular non-logical terms, or

[15] Juan Celaya 1526, sig. E ii va. For the same exclusion but a different reason, see Soto 1539–1540, f. liii va.

[16] Peter of Spain 1972, 56 summarizes the doctrine.

because of a metaphysical link between the referents of these terms. I dub these 'non-formal', and since the substitution criterion is not met, the impossibility involved will be semantic or metaphysical impossibility or both. Typically such arguments were enthymemes, such as 'If Socrates is a man, Socrates is an animal.' In the case of invalid arguments some will be clearly unacceptable and others apparently acceptable. In the latter case, we have to ask whether we are talking about incomplete arguments, notably enthymemes with contingent premisses, such as 'If Socrates is running, a white thing is running', that need to be re-expressed as formal deductive arguments by means of an extra premiss, or about those arguments whose premisses offer some degree of support to the conclusion, or in some way make it reasonable to accept the conclusion. Only the latter are properly dubbed 'informal'. How far an interest in such arguments can be attributed to Soto and Fonseca is one question I want to answer, but we also have to consider how they approached the distinction I sketched between formal and non-formal valid deductive arguments, and whether this distinction corresponds to their distinction between formal and material arguments.

Domingo de Soto

Domingo de Soto seems to use the words '*consequentia*' and '*argumentatio*' interchangeably. He defines an *argumentatio* as an expression (*oratio*) in which when one thing is given, another follows (*oratio in qua, uno dato, alterum consequitur*) and he explains that he has not said 'in which one thing follows from another' (*in qua ex uno sequitur alterum*) in order to indicate that if the premiss is granted, correctly or not, the conclusion will result (f. xvi (1) vb). That is, he says, the definition should not apply only to valid consequences but also to invalid. He offers two alternative classifications of consequences. On the one hand, they are divided first, into formal and material, and second, into the standard four species of argumentation, syllogism, induction, enthymeme, and example (f. liii<i> ra). Here we need to note that 'syllogism' includes both categorical and hypothetical syllogisms, and, more importantly, that while 'enthymeme' for Soto has the proper sense of an incomplete syllogism, in a broader sense, it includes all categorical modes of arguing from a single categorical proposition to another, including the arguments from definition to defined, and

from inferior to superior. On the other hand, he uses his identification of all argumentations or consequences as hypothetical propositions to subdivide them in accordance with three kinds of conditional proposition: the illative conditional, indicated by '*si*', the rational conditional, indicated by '*ergo*',[17] and the causal conditional, indicated by '*quia*' (f. xvi (2) ra). It is a necessary condition for the truth of all three that the conditional be a valid consequence, and for the illative conditional, it is also sufficient. Rational arguments additionally require the truth of both antecedent and consequent, and causal arguments further require the presence of a causal link. Soto remarks that as hypothetical propositions, all argumentations are true or false, but they are not normally so called.

So far as the modality of conditionals is concerned, Domingo de Soto followed Peter of Spain (1972, 9), who had said that all true conditionals are necessary, and all false conditionals are impossible. Unlike most logicians, Soto offered an explanation. He said that if a conditional was such that it was not possible at a particular time (*semel*) for the antecedent to be true when the consequent was false, this was so for all times, and if it was possible at a particular time, this too was so for all times, so at no time could the conditional be valid.[18] Thus there are no contingent illative conditionals, and it also follows that the notion of a consequence which is contingent will make no sense. Lurking behind these remarks is an assumption about the metaphysical basis of illative conditionals.[19] A genuine or successful conditional can only be about necessarily connected or disconnected objects or states of affairs, which are dealt with by a group of Topics including genus and species. This view is linked with a version of Peter of Spain's *Syncategoremata*, which was printed in the late fifteenth century.[20] This text says:

> Secondly, it follows that the truth of a conditional is caused by the relationship of the antecedent to the consequent […]. Wherefore every true

---

[17] We should note that Soto often uses the word '*ergo*' where a rational argument is obviously not at issue.

[18] Soto 1539–1540, f. liii rb. 'Cuius ratio est, quia consequentia que semel est bona semper est bona, que semel est mala semper est mala. Unde, cum sufficiat et requiratur ad veritatem conditionalis quod sit bona consequentia, fit ut conditionalis vera sit necessaria et falsa sit impossibilis.'

[19] For discussion, see Ashworth 1989, 213–25.

[20] The quotation comes from Peter of Spain 1964, 55–6. The part of the text translated here from two late fifteenth-century printed editions does not appear in the critical edition of the same work: Peter of Spain 1992.

> conditional is necessary and every false conditional is impossible. For a relationship of such a kind when it is true is necessary and when it is false is impossible, because it is founded on universal intentions, as are 'whole,' 'part,' 'genus,' and such like, which are always necessary or impossible.

Domingo de Soto did make an exception for another kind of conditional, the promissory conditional, such as 'If you win a debate, I will give you a book.' For the truth of this conditional it is not required that it is impossible for the antecedent to be true without the consequent, but only that the antecedent should not be true without the consequent (f. lv ra–rb). Such conditionals are contingent. While God will always know their truth value, Soto emphasizes that we may never know it if the antecedent is not fulfilled. This situation is especially acute for past propositions such as 'If Peter had not drunk the potion, he would not be dead.' Soto also raised the question of promissory conditionals with an impossible antecedent or a necessary consequent. The latter will be true, but the former need not be. If I, in Salamanca, say to you 'If you get to Rome in the next hour, I will give you ten thousand gold coins,' and *per impossibile* you manage to get to Rome from Salamanca in the allotted time, I still might not give you the money.

As part of his discussion of promissory conditionals, Soto also relates the classical story of Euathlus and Protagoras who had agreed that Euathlus should pay for tuition only if he won his first case (f. lv rb–va). Unfortunately, the first case was a lawsuit brought by Protagoras to demand payment from Euathlus, so Protagoras was enabled to argue that Euathlus should pay whether he won or lost, and Euathlus was enabled to argue that whether he won or lost, he would not have to pay. For Soto, the moral of this and related cases is that promises should exclude any self-reference (*seclusa reflexione*). His discussion is absorbed into the medieval context of discussions of the conditions for promise-keeping, and he makes no reference to the notion of classical dilemma, nor does he consider its logical structure.[21] In general, his discussion of promissory conditionals offers no evidence that he was ready to embrace new forms of argumentation taken from his reading of classical sources (in this case, Aulus Gellius, whom he cites).

---

[21] For the problem of promises that cannot be kept, see Ashworth 1976, 75–84, reprinted in Ashworth 1985. For a full discussion of the limited treatment of dilemma and other classical arguments in sixteenth century logic, see Nuchelmans 1991.

We should now consider Soto's definition of validity more closely. He writes: 'A valid consequence is one whose antecedent implies the consequent, that is, whose antecedent cannot be true without the consequent's also being true by virtue of it (*virtute illius*), as in 'If a man exists, an animal exists.'[22] In other words, Soto combines the standard modal criterion, that it is impossible to have both a true antecedent and a false consequent, with a further criterion which requires some kind of relationship between the antecedent and the consequent. His example suggests a semantic relationship, founded, of course, on the metaphysical relationship between species and genus. He goes on to explain that the phrase '*virtute illius*' is added in order to exclude those consequences which are said to hold through an extrinsic mode, such as 'If a man flies, a man sleeps.' That is, he intends to rule out the validity of any consequence whose antecedent is impossible and whose consequent is purely arbitrary, and also, one may assume, any consequence whose consequent is necessary and whose antecedent is purely arbitrary. That is, he excludes the paradoxes of formal and material implication. Invalid inferences are those which lack an inferential link,[23] and they are divided into two sorts: those that are *non apparens* and useless for any *scientia*, and those which are apparent and are called rhetorical, such as 'If Peter were to dispute, Peter would be learned' (*si Petrus disputaret, Petrus esset doctus*).[24] This remark hints at the existence of informal arguments which involve some kind of non-necessary factual link such as that between disputations as a tool of instruction and the hoped-for outcome of a learned man, but they are firmly relegated to the rhetorician.

Soto's insistence on a link between antecedent and consequent is strengthened by his discussion of the standard distinction between formal and material consequences (f. liii<i> ra). In a brief account, he says simply that the first '*tenet de forma*' and the second '*tenet de materia*', and it is easy to suppose that the substitution criterion is at stake. However, he refers the reader to two lengthy discussions of what it is

[22] Soto 1539–1540, f. xvi (2) ra. "Consequentia bona est cuius antecedens infert consequens, idest, cuius antecedens non potest esse verum, quin virtute illius, consequens sit verum, ut 'si homo est, animal est'."

[23] Soto 1539–1540, f. xvi (2) ra. 'Consequentia mala est cuius antecedens non infert consequens, idest, quantum est ex virtute illationis, non repugnat antecedens esse verum sine consequente.'

[24] Soto 1539–1540, f. xvi (2) ra–rb. Note that disputation was an important part of all undergraduate instruction.

for two propositions to be similar in form, and in the end it turns out that his preferred criterion disallows certain kinds of substitution. His first reference is to his discussion of the conditions of opposition (f. xxxviii ra–va). Here we find what was the standard structural account of formal similarity, defined with respect to the quality and quantity of propositions, the placing (*situs*) of terms, whether categorematic or syncategorematic, together with the requirement that the categorematic terms have the same type of supposition, material, simple or personal. His second reference is to his discussion of the categorical syllogism in book V and at first sight, we seem once more to have to do with the structural account of formal similarity. He writes: 'A material consequence holds only in such-and-such terms and such-and-such matter; a formal consequence holds in any matter and any terms having the same form (*eiusdem forme*).'[25] It sounds as if meeting the substitution criterion together with the modal criterion is both necessary and sufficient for formal validity. However, it soon becomes clear that this little phrase '*eiusdem forme*' involves a lot more than mere structural similarity and the uniform replacement of non-logical terms. Soto notes that contemporary logicians take material consequences to be those that move from inferior to superior or from definition to defined and the like, as in 'Peter is a man, therefore Peter is an animal.' They claim that this is a material consequence because one similar in form, 'Peter is a man, therefore Peter is a horse,' is invalid. In the same way, 'Peter is a man, therefore Peter is a rational animal' will fail to be formally valid because of its structural similarity to 'Peter is a man, therefore Peter is a white animal.' Yet for Soto, these examples do not betray any similarity of form, because the relation between inferior and superior or between definition and defined is intrinsic and must be retained for similarity of form. It is, he says, a fundamental rule that every relationship of terms which is expressed in some rule for arguing logically (*in aliquo loco arguendi logicali*) must be retained. He adds that a material consequence is one which does not hold through some dialectical topic (*per aliquem dialecticum locum*) but only through its subject matter, for example 'A man is rational, therefore every man is rational' or 'A man is not a stone, therefore no man is a stone.' Such

[25] Soto 1539–1540, f. lxxvii ra. 'Materialis est que tenet solum in talibus terminis et tali materia; formalis, que tenet in quacunque materia et quibuscumque terminis eiusdem forme.'

consequences hold in natural matter, in which the predicate is necessarily linked with the subject, and remote matter, in which the predicate is necessarily incompatible with the subject, but not in contingent matter.[26] Formal similarity requires the usual conditions pertaining to logical structure, together with the condition that the relation between premisses themselves and also the relation between premisses and conclusion in accordance with the dialectical Topics for that subject matter (*secundum exigentiam loci dialectici in tali materia*) should be kept.[27] If one were to insist that any argument which fails to meet the standard substitution criterion is non-formal, many of Soto's formal arguments would be non-formal, but they would not be in any way probabilistic, since they are firmly rooted in semantic or metaphysical necessity, perhaps both.

One might ask how Soto's criterion applies to forms of argumentation other than the enthymeme, taken in the broad sense which Soto prefers. So far as example is concerned, he seems to have nothing to say beyond the brief reference in his list of the four kinds of argumentation (f. liii<i> ra), but he discusses both syllogism and induction. His main points about the categorical syllogism are that for a consequence to be a syllogism, it must be formal (f. lxxvii ra), and that the four perfect syllogisms, *barbara, celarent, darii*, and *ferio*, are *per se note*. They are regulated by *dici de omni* and *dici de nullo*, but they are not proved by any other consequence.[28] What makes them formal is the fact that from the connection of the middle term with the major and minor terms, the connection of the major and minor terms to each other immediately follows.[29] There is no reference to the Topics, and since Soto insists on the possibility of false premisses, such as 'Every

[26] For the doctrine of three matters, see Peter of Spain 1972, 7.

[27] Soto 1539–1540, f. lxxvii ra. 'Unde ad hoc quod aliqua consequentia sit similis forme cum alia requiritur primo quamlibet categoricam unius esse similis forme cum categorica alterius in simili situ ut puta maiorem cum maiori, minorem cum minori, conclusionem cum conclusione iuxta modum expositum in 'de oppositione'. Secundo requiritur quod qualis est habitudo inter premissas unius ad invicem et qualis est inter premissas et conclusionem, talis servetur inter premissas alterius ad invicem et inter premissas et conclusionem, secundum exigentiam loci dialectici in tali materia.'

[28] Soto 1539–1540, f. lxxvi va (printed as f. loxxiii). He writes 'Itaque ostendit Aristoteles naturam propositionis universalis esse vim illationis syllogismi perfecti. […] certe darii et ceteri modi perfecti sunt per se note consequentie. Sed Aristoteles declarat bonitatem illarum per terminos evidentiores, licet non per consequentiam que ex forma sua sit evidentior […].'

[29] Soto 1539–1540, f. lxxvii rb. 'Syllogismus est consequentia formalis quia, virtute connexionis medii cum extremitatibus, sequitur connexio extremitatum inter se.'

man is a stone', it seems that he takes the categorical syllogism to obey the standard substitution criterion.

So far as hypothetical syllogisms are concerned, they are all formal consequences, and he calls them '*loci arguendi*'.[30] Presumably they too are *per se note* consequences.

Induction is discussed in the context of suppositional ascent and descent, where he asks whether induction, as equivalent to ascent, is a formal consequence (ff. xxvii rb–xxvii<i> ra). After a lengthy consideration of the extra clauses that one might add to ensure that the move from particular statements to a universal statement is valid, he remarks that for Aristotle and Peter of Spain it is not necessary for induction to be a formal consequence (f. xxvii vb), and he notes that the power of induction is that it enables us to move from what we have experienced, such as hot fires, to the conclusion that it is *verisimile et probabile* that all the fires we have not experienced are hot. However, if we grant that induction is a formal consequence, we still do not need to add a plethora of extra premisses (ff. xxvii vb–xxvii<i> ra). If we argue 'Peter is disputing, and Paul is disputing, and so on, therefore all men are disputing', we do not need to add the premiss 'and they are all men' on the grounds that only this will debar the conclusion 'therefore all lions are disputing'. 'Peter is disputing and Paul is disputing, and so on, therefore all lions are disputing' is not similar in form to the first example, because the relation of singulars to their universal is intrinsic. Ascent using proper names is equivalent to ascent using the appropriate common term with a pronoun, that is, 'this man, that man, and so on'. The assumption here is a semantic one. Just as 'Peter' is the name of a man, so 'Brownie' is the name of a donkey, and 'Rover' is the name of a dog.

One of the aims that Soto has in his main discussion of the conditions for a formal consequence is to lay out further reasons for the exclusion of the paradoxes of strict and material implication, EIQ (*Ex impossibili sequitur quodlibet*) and NEQ (*Necessarium sequitur ex quolibet*).[31] In this he departs from those medieval logicians who had rejected the substitution criterion as a tool for distinguishing between formal and material consequences but had accepted EIQ and NEQ. For instance,

[30] Soto 1539–1540, f. liii vb (conditional syllogisms), f. lvii ra (conjunctive syllogisms), f. lx rb (disjunctive syllogisms).

[31] For various views of EIQ and NEQ, see Ashworth 1974, 133–6.

both Richard Billingham and Ralph Strode, who had adopted a containment criterion whereby a valid consequence is formal only if the consequent is 'understood in' the antecedent, classified EIQ and NEQ as materially valid consequences.[32] Soto does allow that these principles apply to propositions taken generically (f. liii va). Thus from an impossible proposition one may infer another impossible proposition, or a necessary proposition, or a contingent proposition. Similarly, a necessary proposition may follow from another necessary proposition, or an impossible proposition, or a contingent proposition. However, there must always be a link between antecedent and consequent.

In his discussion (f. liii<i> ra–rb) he takes up a particular problem posed by the inference '*Si deus non est, deus est*'.[33] This seems to be valid according to the definition of the *Moderni* which allows for EIQ in the non-generic sense, but it violates Aristotle's principle that a proposition cannot imply its own contradictory. Soto argues that EIQ violates common sense, is contrary to Aristotle, and destroys all *modi arguendi ac philosophandi*. He rejects the claim that there are two types of valid consequence, one which relies on a relationship (*per modum intrinsecum*) and one which does not (*per modum extrinsecum*), and that EIQ and NEQ belong to the latter. Validity must depend on a relationship between antecedent and consequent. Having rejected the general principle, he claims that one cannot argue that by positing the truth of 'God does not exist' one will thereby posit the truth of 'God exists'. This remark takes us back to his definition of validity, which required that if the antecedent were true, the consequent would be true by virtue of its link with the antecedent. He goes on to remark that when he rejects the argument by saying that the antecedent can indeed be true without the consequent, he is not saying anything about the truth of the antecedent, but about its compossibility with the opposite of the consequent. To the reply that in the case of 'A man is a stone, therefore a man is not a substance' one can argue that it is valid because the conjunction 'A man is a stone and every man is a substance' is inconsistent merely on the grounds that 'A man is a stone' is an impossible proposition, Soto replies that for the opposite of the consequent to be inconsistent with the antecedent, it is certainly required that the

[32] Billingham, *Consequentiae*, MS Oxford Bodleian Lat. misc. e 100, f. 56 r; Strode in Pozzi 1978, 238.

[33] For further analysis of Soto on EIQ, see Read 1993, 233–59, esp. 251–5.

conjunction be impossible, which requires only the impossibility of one conjunct, but also that the two propositions be incompossible in the sense that the falsity of one should follow from the truth of the other. Otherwise a proposition will be inconsistent with itself, and unlike Paul of Pergula (1961, 88), Soto regards this as absurd.

Soto then goes on to consider the case of the standard argument for the version of EIQ which starts with a formal contradiction, and seems to reach its conclusion *per modum intrinsecum* (f. liii<i> rb–va). That is, it relies on the relationships captured by conjunctive and disjunctive syllogisms. The argument looks like this:

> P and not P, therefore P
> P, therefore P or Q
> P and not P, therefore not P
> P or Q and not P, therefore Q
> Hence from first to last: P and not P, therefore Q

In the second edition, he dismisses the argument on the grounds that it does not qualify as an argument from first to last, because in step three the consequent is not the antecedent of step four, and in any case, 'not P' in the premiss of step four has not been granted to be true. In the first edition of his *Summulae*, he has a more elaborate argument, to do with the way in which the initial conjunction 'P and not P' is to be taken, not absolutely but only for the sake of the disputation, so that both conjuncts must be accepted and one cannot be used in a disjunctive syllogism to negate the other.[34]

Petrus Fonseca

Now let us turn to Petrus Fonseca. The first thing to note is that he takes the notion of *consequentia* or *consequutio* to be wider than that of *argumentatio*, and he lists four kinds of *consequentia* (1964, 328–30): 1) Consequences in which a statement (*enuntiatio*) follows from itself or its equivalent. Here we have explicit recognition of 'P therefore P'. 2) Consequences with the same categorical terms in the same order but different syncategorematic terms, as in 'Every man is an animal, therefore some man is an animal.' 3) Consequences in which the order of categorical terms is reversed, as in simple conversion, and the syn-

[34] Domingo de Soto 1529, f. lxxiiii va.

categorematic terms may vary (as in 'it is necessary for all men to be animals, therefore it is necessary for some animal to be a man'). These three cases include all the consequences that Soto had classified as enthymemes in a broad sense. Case (4) embraces consequences in which the antecedent contains a categorical term which does not appear in the consequent. Only this fourth type is genuine argumentation, and it is divided into the usual four subspecies.

Fonseca gives the standard modal account of validity, without any extra conditions (1964, 332), followed by a straightforward substitutional account of formality (1964, 334–6). He defines a material consequence as one which holds only because of its subject matter, that is, the things signified (1964, 336–8). Thus 'Man is an animal, therefore he uses senses (*est sensus particeps*)' is only materially valid because if we substitute 'uses neighing' (*est hinnitus particeps*) we get an invalid result. He then applies his definitions to the four kinds of consequence he has outlined (1964, 338). Consequences of type 1 must be formal, even though they are, he says, ridiculous.[35] 'Man is an animal, therefore man is an animal' is a formal consequence and maximally necessary, just as 'Man is man' is a statement, and maximally necessary. Consequences of types 2 and 3 can be either formal or material. Thus Soto's example of a material consequence, 'A man is an animal, therefore every man is an animal', is material for Fonseca as well, albeit in a different sense. Of the four kinds of argumentation listed under the fourth kind of consequence, only syllogisms are formal consequences, though perhaps some kinds of induction are also formal. If one argues 'This fire burns, and this fire burns, and this fire burns, and so for all the other fires (*et ita reliqui ignes*), therefore every fire burns', one has a formal consequence, but not an argumentation, because the premiss is equivalent to the conclusion (1964, 444).

So far Fonseca has given a perfectly standard account of one well-established tradition. However, he has an entire (albeit short) chapter entitled '*De consequentia necessaria et probabili*' (1964, 340). Here he argues that while all formal consequences are necessary, material consequences can be either necessary or probable. 'A man is an animal, therefore every man is an animal' is necessary, but 'A mother loves her

[35] Here, as Sten Ebbesen pointed out, there is a reference to Boethius, *De syllogismo categorico* II, *PL* 64, 821C: 'Si homo es, homo es; Homo autem es; Homo igitur es' and 822A: 'Tales vero syllogismi quales nunc dicti sunt per ridiculi sunt, quod id quod ante concessum est quasi dubium quiddam in conclusione colligitur.'

child, therefore this mother loves her child' is probable in the sense that there is no necessary link between antecedent and conclusion. The conclusion follows often, but not always. We have here a recognition of genuine informal arguments, which is presumably based either on Boethius's *De topicis differentiis*, where Boethius speaks of arguments which are believable but not necessary, such as 'If she is a mother she loves her child' or on Cicero's *De inventione*, where the same argument appears.[36] Fonseca does not enlarge on the issue in this chapter, but there are two other relevant passages. In his discussion of the conditional, he says (1964, 198) that its truth '*in sola consequutione consistit*'. He then remarks that although some people hold that every true conditional is necessary, and every false conditional impossible, this is not true, for some are contingent, especially where future contingents are concerned, but also with respect to statements about the present time such as 'If someone is a mother, she loves her child.' In his discussion of the Topic called 'from adjuncts' by Cicero, and 'from associated things' (*communiter accidentia*) by Boethius and Peter of Spain, he speaks of things which are not necessarily connected (1964, 542–4). He notes that insofar as these give rise to probabilities rather than mere *suspicio*, they can appropriately be used by the dialectician as well as the rhetorician.

Two final points worth noting arise from his short list of eight general rules for consequences (1964, 342–50). First, he includes the restricted generic versions of EIQ (1964, 344) and NEQ (1964, 342) without any discussion. Second, he uses the Greek word '*sorites*' as another heading for the argument from first to last (1964, 348). He mentions that Cicero criticized *sorites*, under the name '*acervalis*', but explains that if the sequence of consequences is properly constructed, the argument is acceptable. However, in such a sequence it is easy for errors to creep in, '*quasi grana granis minutatim adduntur*'. Despite this reference to the gradual addition of grains, he clearly has no intention to speak of the standard 'heap' argument, so his mention of *sorites* cannot be used as evidence for the use of informal arguments.

[36] Boethius, *De differentiis topicis PL* 64, 1180D; Cicero, *De inventione* 1.29.46. I owe the Cicero reference to Sten Ebbesen.

Conclusion

Both Soto and Fonseca show the effects of Renaissance humanism so far as their writing style and examples are concerned, Fonseca to a far larger extent than Soto. However, neither of them shows the supposed impact of humanist logic. The syllogism retains its central place for both authors. Soto insists on the role of the Topics in argumentation, but he has no separate discussion of the Topics as such, and he uses Topical material to reinforce his account of valid arguments as either formal in his expanded sense or as non-formal but none the less necessary. Fonseca, on the other hand, in many ways a more conventional Aristotelian, does allow a place to informal probabilistic argumentation, but it is still a very small place. For both Soto and Fonseca, the scope of logic and the logical methods to be adopted remain very much what they were for medieval logicians.

PART TWO

METHODOLOGIES

INTERPRETING MEDIEVAL LOGIC AND IN MEDIEVAL LOGIC

Simo Knuuttila

While medieval logicians were well aware of the temporal distance between Aristotle and themselves, they seldom considered the problems of historical interpretation when discussing Aristotle's logic. In this respect their approach to Aristotle is somewhat similar to those contemporary logical studies in which formal modelling is offered of historical texts, whether in terms of modern predicate logic, set theory, or the logic of relations. The similarities notwithstanding, historical awareness plays a much more central role in our times that in the Middle Ages; even the studies employing contemporary formal tools often include notes on historicity and anachronism. My aim is to make some remarks on these issues. In the first part, I shall discuss some examples of what could be regarded as the non-historical medieval approach to Aristotle's logic. It seems that the authors assumed that logic is what it is and were inclined to argue that, when they believed they understood the logical question Aristotle dealt with, this was what Aristotle said or meant to say. It was not usual to characterise one's interpretation as a hypothetical exposition of what Aristotle wrote, notwithstanding various competitive interpretations. In the fourteenth century, there were some more contextual readings of Aristotle, even though the historical constructions were pretty speculative. In the second part, I comment on some contemporary interpretations of medieval modal logic which are much more aware of interpretational conditions. After some examples of how to see the relationship between historical texts and interpretative terms, I discuss the difference between the rational reconstruction of what historical authors *did* say and the formal construction of what they *might* or *should have* said.

Medieval Examples of What Aristotle Said or Meant

In his longer commentary on Aristotle's *De interpretatione*, Peter Abelard describes Aristotle's view as follows:

> Aristotle here calls propositions determinately or indeterminately true or false with respect to the determinate or indeterminate states of affairs they propose.[1]

Since Abelard certainly knew that Aristotle did not use the words 'determinately' and 'indeterminately' in Chapter 9 of *De interpretatione*, why did he maintain that Aristotle characterized the truth of propositions in this way? This terminology was introduced into the commentaries on *De interpretatione* by late ancient thinkers, possibly Porphyry, and it is found in Boethius and Ammonius. Boethius uses the terms 'definite' and 'indefinite', which correspond to Abelard's distinction, in discussing future contingent propositions in his commentaries on Chapter 9 of *De interpretatione*.[2] I think that what Abelard meant was that Aristotle understood the difference between the truth and falsity of future contingent propositions and other propositions in a way which could be expressed by referring to determinateness and indeterminateness, as he did, even though Aristotle himself did not use this terminology. Abelard could have said that this was his interpretation in which he employed received terminology, not quite in the same way as Boethius did. But having established this, we would like to ask why maintain that *Aristoteles propositiones determinate vel indeterminate veras vel falsas dicit quantum ad eventum* and so on, if one knows that Aristotle does not use these terms? Why not say that Aristotle's position might be described in this way? Aristotle himself drew a distinction between a historical position and his interpretative terms when commenting on the views of the so-called pre-Socratic philosophers. (See, for example, *Metaphysics* I.4, 985a4–10; I.8, 989a30–33).

Let us take another example from Robert Kilwardby's commentary on *Prior Analytics*. In discussing counter-examples to Aristotle's conversion rules of necessity propositions, Kilwardby comments on the conversion of 'Every literate being is necessarily a human being' as follows:

> The propositions in which the name of an accident is subject are not *per se* necessary but only *per accidens*. A per se *necessary* proposition requires that the subject is *per se* something predicated of it. When it is said 'Every literate being is necessarily a human being', the subject is not *per se* something predicated of it. Since 'literate being' is not separated

[1] Peter Abelard 1919–27, 422.
[2] See Knuuttila 2010.

> from what belongs to a human being itself, it is conceded that the proposition is necessary, but when a proposition is necessary in this way, it is necessary *per accidens*. Therefore, when Aristotle teaches that necessity propositions convert, he only teaches that *per se* necessity propositions convert.[3]

The conversion of the above proposition into 'Some human beings are necessarily literate' is a problem, of course but, contrary to Kilwardby's formulation, Aristotle did not speak about necessity propositions *per se* and *per accidens* in this place. It is in order to add that the suggestions of Abelard and Kilwardby are reasonable, whatever their historical plausibility might be. Abelard's account of future contingents is largely the same as that assigned to Aristotle and Boethius by Mario Mignucci, which, admittedly, is not the majority interpretation, and Kilwardby's point, which may be influenced by Averroes, is similar to how some historians explain Aristotle's view, even though this is also a controversial matter.[4]

These examples illustrate the habit of thinking that, if one gets a clear and true idea in reading Aristotelian texts, this is what Aristotle means, and this idea could then perhaps be formulated more explicitly. There is no clear distinction between the historical construction of what Aristotle meant and the systematic solution to the problem which is dealt with. These authors seem to think that there is something like a true logical theory and whenever they grasp some elements of the true theory, they can say that this is what Aristotle has in mind. The interpretational situation is formed by three factors, the text, the ideal theory and the interpreter. The text is taken to explicate the ideal theory. When the interpreter has clearly understood something on the ideal level, he says that this is what Aristotle teaches or means.[5]

Let us consider an example from Buridan:

> I answer that Aristotle to a great extent agreed with our true faith and firmly believed that many things are impossible with respect to natural possibilities and simply possible through supernatural potency… While

---

[3] *In libros Priorum Analyticorum expositio*: Robert Kilwardby 1516, 7rb.

[4] Mignucci 1989; 1998. For *per se* vs. *per accidens* modalities in Aristotle and medieval commentators, see Van Rijen 1989, 132–53.

[5] Averroes famously wrote that Aristotle was more divine than human: *Aristotelis de physico auditu libri octo cum Averrois commentariis* (Aristotle 1562), vol. IV, 5r. Aristotle was the symbol for logic as such even in seventeenth-century Lutheran Aristotelianism; Georg Gutke, for example, entitled his logic book published in Berlin in 1626 *Logicae divinae seu peripateticae… principia*.

> feeling great joy for having noticed this, I leave the ultimate decision to more subtle and wise people.[6]

How did he find these surprising things in Aristotle? Buridan thought that Aristotle's counterfactual assumptions in physical reduction arguments could not be simply impossible, which would make the arguments nonsensical. Buridan heavily criticized the interpretation of Aquinas and Averroes which, to be sure, was pretty speculative. His own point was that since Aristotle's arguments did not make sense without the distinction between logical and natural possibilities and necessities, Aristotle must have operated with this distinction, although he did not say so. This is an interesting argument because Buridan also distanced himself from some Aristotelian ideas in his logic.[7] However, here he thinks that because the truth is what it is, Aristotle must have followed it. Perhaps the reason is that he found the alternative readings very silly in this case, or at least he wondered how people could ever put forward the opinions they did.[8] In discussing Aristotle's modal syllogistic in his *Summa logicae*, William Ockham systematically uses the distinctions between modal propositions *de dicto* and *de re* and between the *de re* possibility and contingency propositions with actual subject terms and merely possible subject terms. These were not explicitly found in Aristotle because, as Ockham informs his readers, Aristotle sometimes operates with one reading and sometimes with another in order to suggest how these readings should be applied in other contexts.[9] One may wonder whether this is an ironic comment on the habit of referring to Aristotle as the symbol of reasonableness; after all, Ockham also criticized Aristotle elsewhere.[10]

The next example is from early fourteenth-century discussions of the validity of the traditional *dictum de omni et nullo* with respect to various Trinitarian paralogisms. The most popular solution became the circumlocution of the universal proposition 'Every A is B' as 'Everything which is A is B' and the reduction of a syllogistic singular premise to a universal premise with the same terms. Referring to theological examples of this kind, Buridan writes that no syllogism is formal *secundum communem et consuetum modum loquendi*, meaning

---

[6] Buridan 1509, 105rb.
[7] For Buridan's interpretation of modal syllogistics, see Knuuttila 2008, 551–9.
[8] See also Knuuttila 2001, 69–71; Kukkonen 2005, 459–61.
[9] See *Summa logicae* III.1.31: William of Ockham 1974, 443.
[10] See, for example, *Summa logicae* I.42: William of Ockham 1974, 121.

that the premises are formulated without the circumlocution; that is, without attaching the *qui est* or *quod est* phrases to the subject term. These circumlocutions should be added, even though Aristotle did not do so.[11] Some stated that the circumlocution of the premises was what Aristotle intended. The universalization of 'This universal man is Plato' is true in a Platonic ontology, when what is universalized is the one universal man ('Every universal man is Plato'), but this universal proposition is not regulated by the *dictum de omni et nullo*. Only 'Everything which is a universal man is Plato' is so regulated, but then the proposition is false. The same applies to propositions such as 'Every divine essence is the Father'.[12] As for the circumlocution of the premises, some fourteenth-century authors taught that Catholic faith really involved principles which improved logic. These were explicated in the universally valid logic of faith, on the basis of which some formulations of Aristotle's syllogistics should be changed. Had Aristotle been familiar with the articles of faith, he would have accepted the corrections.[13] Those who wanted to keep logic and theology separate, such as Adam Wodeham, stressed that the new principles would not have been a surprise to Aristotle. Even though he did not formulate them, he wanted his syllogistic to be understood in the same way. Being aware of analogous problems in Platonic ontology, he intended his syllogistic theory to be immune to them. While these theories show some historical awareness, they also assume in a less historical manner that Aristotle was the main representative of normative reason and that logical innovations were implicitly present in his works or he would have accepted them if he had been a Christian. Explicating Aristotle's original intention by referring to his awareness of the problems of Platonic ontology was a clever idea. While this was admittedly more speculative than historical, it also involved an attempt to avoid anachronism by means of some sort of contextual reconstruction.

When Wodeham analyses the structure of circumlocuted propositions, he suggests that they should be read 'Omne in quo B ei in quo A idem' or 'Omne idem ei quod est B est idem ei quod est A' or more simply 'Omne idem B est idem A'. In facing the charge that Aristotle

---

[11] *Tractatus de consequentiis* (John Buridan 1976), III.1.4.1 (86).

[12] See Adam Wodeham, *Super quattuor libros Sententiarum*, abbreviated by Henry Totting of Oyta, I, 33.3.2 (81ra); Henry Totting of Oyta, *Quaestiones in libros Sententiarum* I, 8.2, ed. in Maierù 1981, 499–503; Shank 1988, 90–4.

[13] See the anonymous text edited in Maierù 1988, 283.

seems not use this formulation. Wodeham advises us not to trust too much in translations.[14] Before Wodeham, Roger Bacon held a very low opinion of the quality of the Aristotle translations.[15]

Interpreting Medieval Logic

In the opening paragraph of his book *The Logical Grammar of Abelard*, Roberto Pinzani writes that he is not quite sure whether there is any such thing as the logical grammar of Abelard, and then explains how it makes sense to speak seriously about such a thing of whose existence one is not sure. Pinzani writes:

> It is difficult to say whether the present research can be regarded as grounded on actual facts, namely whether an Abelardian logical grammar exists or not. What we are seeking here seems to take shape when we gather our 'historical' knowledge (of the author, his sources, the textual tradition) as well as what we have learned about the topic, i.e. logic and grammar. In principle it is reasonable to assume that the way research is carried out can affect its subject. The *id quo*, that is the model, provides us not with the data but the image or a trace to be compared with the textual reality… While reading Abelard's logic works one may follow the idea that several parts of these works could be interpreted from the point of view of a categorical grammar; in particular, the use (of elements) of the Montague grammar as a model seems to have some advantages in the interpretation of the logical theory… If we keep in the background that system of logical grammar, we may wonder which notions could be relevant for us and how. There is no answer *a priori*: we are looking at a complex network of links between the text and the model; the model leads us to read the text in a certain perspective, whilst the textual analysis gives us some indications on the choice of the theoretical frame.[16]

How does this differ from medieval approaches? Pinzani is, of course, much more aware of historical contingencies than medieval authors were. He does not say that Abelard was developing Montague grammar, but there is also to some extent the medieval spirit of logical Platonism here. It is assumed that Montague grammar and Abelard's logic are intellectual works pertaining to some similar questions of

---

[14] *Super quattuor libros Sententiarum*, abbreviated by Henry Totting of Oyta, I, 33.3.2 (81va); cf. Wodeham, *Super Sententias* (Oxford) I.33.3.2, Vat. Lat. 955, f. 187v–188r. For further details see Knuuttila 2007.

[15] See *Opus maius* 5.1.1.5: 'Quoniam autem non potest textus Aristotelis, propter perversitatem translationis, intelligi ibi sicut nec alibi quasi ubique'; edited in Lindberg 1996, 16.

[16] Pinzani 2003.

logic, of which the former grasps more than the latter. It is therefore illuminating to use the former theory as a model in order to see what is going on in Abelard. The model shows important things in Abelard which would remain unremarked otherwise.

Let us consider a quotation from Peter King's work on Buridan's logic:

> We may extend this point: if we take part of Buridan's divided modal syllogistic as specifying how iterated modal terms are to be treated – what single modal term corresponds to an iterated pair of modal terms – then which divided modal syllogisms Buridan finds acceptable, and what iteration-deductions they embrace, will tell us (roughly) what system of modal logic Buridan is using. It seems to be S5.[17]

This is a somewhat more straightforward formulation of employing later logical developments in historical analysis. It seems that the author takes the modal system S5 with its contemporary semantics as an interpretative starting-point which can be applied to Buridan, even though he was not aware that this was what he was doing. Contrary to what one might assume, King is not explaining Buridan's logic from the point of view of contemporary logical theory. He uses it in noting iterated modalities, an aspect of Buridan's theory which Buridan in fact did not elaborate, and characterizes in general terms his modal theory using modern theory.[18]

Pinzani and King are not anachronistic historians, such as Bertrand Russell who often tended to treat historical texts as if they were weak answers to the philosophical questions which he had in mind in his *History of Western Philosophy*, sometimes helping historical authors with his own philosophical tools. However, the above quotations make one wonder about the status of interpretative models.

Systematic knowledge of contemporary logic and logical semantics can be helpful and even necessary in identifying ideas and problems in historical logic texts. In a non-anachronistic philosophical interpretation, when we find similarities and analogies which may help us to

[17] Buridan 1985, 81.

[18] G.E. Hughes writes about Buridan: 'It seems to me, in fact, that in his modal logic he is implicitly working with a kind of possible worlds semantics throughout'; see Hughes 1989, 97. Hughes adds that 'a much more elaborate project still would be to try to give a Kripke-style possible worlds semantics for Buridan's modal system and then an axiomatic basis for it. I think this could probably be done, and would be worth doing; but it would take us well into the twentieth century' (108).

understand the nature of the questions which historical authors are considering, we should investigate how they develop their insights without the help of later conceptual models. In constructing historical positions, this often means that using contemporary models should be accompanied by pointing out the differences between the model and the texts. This is how historical conceptions are often formed in the philosophical history of philosophy. This part is not necessarily very detailed when contemporary ideas are used heuristically. A long list of differences may indicate that the study is a comparison between the model and the texts, instead of a philosophically educated historical interpretation. Comparative studies have their own problems.

It is possible, of course, that there is no essential difference between a contemporary interpretative model and historical texts. In dealing with the branch of medieval obligations logic called *positio*, Christopher Martin describes the possible worlds semantics of the S5 modal system and writes: 'This account of possibility seems to me to be just the one which is used in *positio*.'[19] I think, however, that some qualification is needed here. In the above quotation Hughes tries to express this by saying that Buridan 'implicitly' works with 'a kind of possible worlds semantics'. Working 'implicitly' with a model is not too perspicuous. It might be better to say that the general ideas of many fourteenth-century modal logicians show similarities to those on which the possible world semantics is based, although many basic theoretical questions of modern formal semantics were beyond the purview of medieval logicians. In order to avoid the impression that I find problems in the more or less innocent formulations of other people without seeing those in my own works, I quote a passage from my study of Scotus's modal theory which was included in my dissertation in 1976:

> The idea of compossibility in the model entails that possibilities are classified into equivalence classes on the basis of the relations of compossibility. One of the classes into which logical possibilities are partitioned is the actual world.[20]

I would not use the term 'equivalence classes' now, although I believe that other things are not problematic.

[19] Martin 1990, 578–9.
[20] Knuuttila 1981, 232.

In dealing with Abelard's modal ideas, Christopher Martin he writes:

> The failure to take into account the full range of Abaelard's thinking about possibility has led to some very misleading claims about his views of possibility… His statement in the *'Ingedientibus'* of this aspect of his theory of alternative possibility is so clear, that I will quote it in full… What we have here is the very familiar counterfactual possibility of the *might have been*, sometimes referred to as by modern writers as 'broadly logical possibility'… Each of these possibilities is referred to an alternative history to give a present possibility of things being other than they in fact are.[21]

What Martin says in this article is illuminating and useful. In explaining 'broad logical possibility' he refers to Forbes and Plantinga with the purpose of describing how Abelard's formulations could be understood. Referring to some later ideas with which we are familiar and which seem to be similar or relevant to historical texts is not problematic, even though the theoretical contexts of these and the texts to be explained are different. Saying that Abelard deals with the same modal idea as Forbes and Plantinga does not mean that their modal theories were the same, as they certainly were not. In doing philosophical history of medieval logic, it is good to be aware of contemporary systematic discussions in philosophy, although it is not a good idea to employ contemporary theories as models in a systematic way. We are studying texts which are mostly based on presuppositions which differ from those of contemporary theories. Systematic knowledge often increases our ability to identify the problems discussed in a historical text as well as to avoid non-reflective anachronism, which readily accompanies interpretations 'without presuppositions'. This, I think, was well put by Gadamer, although he mistakenly concluded that genuine historical interpretation in philosophy should also change our conceptions in the 'hermeneutical circle'.[22] Scholars of medieval logic seldom change their logical or philosophical views on the basis of these studies, although even this is possible, but they are very much ready to change their historical beliefs.

Let us turn to another systematic approach which is more constructivist and formal than the interpretations mentioned above, Paul

[21] Martin 2003, 226, 238–9.
[22] Gadamer 1965, 250–5, 342–4, 366, 374–5.

Thom's *Medieval Modal Systems*. In his earlier work, *The Logic of Essentialism*, Thom deals with Aristotle's modal syllogistic by developing and comparing various formal models for the different layers of Aristotle's theory, sometimes in modern notation and sometimes in a notation of his own.[23] The book on medieval logic continues the themes of the earlier work. In discussing Abelard, Thom writes:

> Abelard has a clear conception of what modal logic should look like. This conception rests on three basic ideas – a *de rebus* analysis of modal propositions, a definition of the possible as what is compatible with a thing's nature, and a distinction between *inferentia* and *comitatio*. Elaborating this conception, we can construct a system based on the mixed necessary/assertoric syllogisms in Figures 1 and 3. These are all valid in virtue of being substitution-instances of non-modal syllogisms. The pure necessity-syllogisms of those figures could be added as a derivative case (generated by modal substitution), but will have the status only of *comitatio* not *inferentia*.[24]

Thom is constructing the formal Abelardian system of modal syllogistics on the basis of Abelard's semantic ideas and exemplary formulations of modal syllogisms which are found in his works. The same approach is applied to the logic of Avicenna, Averroes, Kilwardby, Campsall, Ockham and Buridan. Instead of merely commenting on what is explicitly found in the texts, Thom develops formal systems on the basis of the explicit statements of the authors, some chapters being less constructivist than others. He also compares the systems with each other and with Aristotelian systems. This valuable book is more philosophical than historical, led by an interest in the systems which are compatible with what the authors actually say and which can be compared with each other at a formal level. I shall not discuss the problems of formal modelling approaches because these are usually something else than systematic historical interpretations.

In a study of the history of logic, what can be taken for granted even when it is not explicitly stated in the text is an interesting question. In so far as one aims at a historical reconstruction, not too much of what seems to follow from what is actually maintained should be regarded as part of a logician's position, if the consequences are not explicitly formulated or there is no other indication of them. The logical omniscience of model theoretical epistemic logic, which requires a subject

[23] Thom 1996; 2003.
[24] Thom 2003, 63–4.

to know the logical consequences of his or her beliefs,[25] is relevant to those who are interested in indicating how a historical author, given what is found in the texts, should or could have developed the system in question, but it is not descriptive of what people actually know and consequently not a simple basis for historical constructions of what an author meant, although it may be helpful. Thom does not maintain that the logicians he studied knew or believed what in his view was entailed by their formulated positions. In all chapters, he distinguishes between the theorems which are found and those which are not found in the texts. As for Abelard, he mentions six theorems of the former type and 25 theorems of the latter.[26]

Studies in the history of philosophy involve a fact-finding component and an explanatory component, determining what a thinker said 'as accurately, objectively and completely as possible', as Benson Mates put it,[27] and a rational reconstruction of why he or she said it when it is not immediately clear. In explaining the latter task, Robert Sleigh writes: 'The claim accompanying the hypothesis is not that the philosopher in question should have thought this way or might have thought this way, but rather that he *did* think this way.'[28] Even though the study of the history of logic is not doing logic, some knowledge of logic and philosophy is advantageous or necessary for understanding historical texts in the way mentioned above. The same holds for the history of medicine and many other disciplines. For example, comparing counterfactual conditionals in Aquinas and Buridan with, say, possible worlds accounts leads to pay attention to certain features which otherwise might be left unnoticed. This, of course, is not the same as reading the historical positions as supporting or criticizing the current views, although they may make one think about contemporary theories in new ways.[29]

In his monograph on John Buridan, Jack Zupko argues that Buridan's view of logic as something 'that has meaning only when it is learned and applied in practice is completely alien to the modern understanding

[25] Hintikka 1962, 29–31.

[26] For various uses of the use of modern symbolic logic in analyzing medieval logical theories, see also Klima 2001; Dutilh-Novaes 2007; Rahman, Tulenheimo and Genot, eds. 2008; Uckelman 2009.

[27] Mates 1972, 83, quoted in Sleigh 1990, 2.

[28] See Sleigh 1990, 6.

[29] See, e.g., Knuuttila 2001; Kukkonen 2005.

of logic as a self-contained theory of inference'.[30] Zupko probably does not mean that Buridan should not be characterized as a logician from the contemporary point of view at all, but it is not unusual to compare the difference between modern mathematical logic and its predecessors with that between alchemy and chemistry.[31] References to possible worlds semantics and related things in interpreting medieval matters would simply be misguided because of the incommensurability between the topics. Now, no serious researcher of medieval logic is reading modern theories into medieval texts as if not aware of intellectual and contextual differences. This is not a big problem in this branch. Evaluations of the similarities and differences between medieval and modern logic are also more nuanced now than hundred years ago.

I have argued that some systematic knowledge of modern logic is useful in interpreting medieval logic because an acquaintance with various logical ideas makes one more sensitive to interpretational possibilities with respect to historical texts. For example, it is interesting and to some extent illuminating that some central tenets of medieval theories of predication, insolubilia, obligations logic, and modal logic are brought into the discussion by recognizing in historical texts systematic ideas which seem to be based on insights not entirely different from those embedded in variously developed twentieth-century logical theories.[32] Contemporary logic is a large collection of various formal theories, many of which are pretty far from philosophy, whether traditional or contemporary, but there are also discussions of the questions of the philosophy of logic which are useful for the history of logic and may be enriched by the knowledge of historical approaches to the fundamental topics of medieval logic and semantics.[33]

---

[30] Zupko 2003, 136.

[31] Ludwig Wittgenstein put it in this way in his first publication from 1913; see Wittgenstein 1993, 3.

[32] In addition to works mentioned above, see, e.g., Boh 1993; Knuuttila and Hallamaa 1995, 75–87; Mikko Yrjönsuuri (ed., 2001); Normore 2003; Spade 2005; Read 2008.

[33] For more straightforward views of the modern relevance of some medieval logical theories, see Klima 2001; Read 2008; Read 2008a; Panaccio 2008.

IS THERE A MEDIEVAL MEREOLOGY?

Andrew Arlig

Medieval philosophers have a lot to say about parts and wholes, and their reflections on parts and wholes are often quite sophisticated. But do their treatments of parts and wholes amount to a *theory* of parts and wholes, or *mereology*? In a recent survey of medieval treatments of parts and wholes (2006), I assumed that the answer is yes. Here I want to step back and to consider whether there really is such a thing as a medieval mereology.[1]

If we follow the etymology of the term 'mereology' (the Greek word *meros* means 'part'), any sufficiently systematic account of parts and wholes would be a mereology. In the first section of this paper, I will defend the thesis that medieval philosophers have a sufficiently systematic account of parts and wholes. Medieval reflection on parts and wholes is an extension and refinement of a tradition that begins with the Greeks, and which continues to this day. Nonetheless, medieval philosophers put their distinctive imprint on the strands of mereology that emanate from Plato and, especially, Aristotle. I think that there is a class of medieval theories that we may call medieval mereology.

Yet, one might wonder whether medieval mereologies and contemporary mereologies share the same underlying understanding of what it is to be a part. When contemporary logicians and metaphysicians refer to 'mereology', they usually have in mind the class of formal systems that fall under the rubric of Classical Extensional Mereology (or Mereology for short), namely, to the formal systems developed by Leśniewski (1916), Leonard and Goodman (1940), and others. In contemporary discussions of parts and wholes the word 'mereology' often signifies some version of Mereology. It is often claimed that Mereology is ontologically neutral. Some are not so sure that this is right. Indeed, in the final section of this paper, I will argue that in so far as Mereology can be applied to ontology, Mereology cannot remain neutral with

[1] This is a distant descendant of a paper that I presented in Cambridge, February 2007. I thank the participants of the Conference for illuminating comments and discussion. All translations are my own unless otherwise indicated.

respect to what there is. Nevertheless, many critics of Mereology seem to show a curious deference to these logical systems. For example, these critics talk about 'non-mereological' modes of composition.[2] Do they mean to say that if *x* stands in a 'non-mereological' relation of composition to *y*, then *x* is not a part of *y*? Classical Extensional Mereology has one type of part-to-whole relation. Are contemporary critics of Mereology conceding that there is only one part-to-whole relation, but many relations of composers to composites?

In marked contrast to contemporary discussions, medieval mereologists are unapologetically metaphysical. As we will see very shortly, this makes medieval mereology much more complicated. In particular, medieval mereologists find that they must resort to a theory with distinct, irreducible modes of composition and division.

If contemporary discussions of mereology by and large assume a singular notion of *part* whereas medieval discussions assume a plurality of notions of part, does this mean that medieval mereologists are not talking about the same subject matter as contemporary mereologists? I think that this is not the case. In the middle sections, I will explain why I am convinced that medieval philosophers and contemporary philosophers are not talking past one another. I will present a skeletal notion of parthood, and I will present reasons to believe that many medieval notions of *part* conform to this skeletal notion of being a part of something. This common ground should enable us to evaluate medieval theories on their philosophical merits. I will suggest in the final section that contemporary metaphysicians might want to view medieval mereology as a model for how one can develop a comprehensive account of parts and wholes.

There is a Medieval Mereology

There is good reason to think that medieval philosophers had a theory of parts and wholes. To show that there is a medieval mereology, I first need to establish a criterion for what would count as a theory of parts and wholes. I think that there are at least these four desiderata that an adequate logical and metaphysical theory of parts and wholes needs to satisfy. As far as the logic of part and whole is concerned:

[2] See, e.g., Armstrong 1997, 119–23.

1. A theory of part and whole should determine how many types of part-to-whole relations there are.
2. A theory of part and whole should determine what further inferences or facts are warranted by the fact that *x* is a part of *y*, or the fact that *z* is the whole consisting of *x* and *y*.

In medieval philosophy logic is rarely cleanly demarcated from metaphysics, and as I will illustrate in the last section, systematic accounts of parts and wholes should be of interest to not only logicians but also metaphysicians. Hence, in addition to these two logical considerations, we may add two metaphysical desiderata:

3. A theory of part and whole should tell us what items can be parts and what items can be wholes.
4. A theory of part and whole should tell us when an item, which can be a part, is in fact a part of some whole, and it should tell us when some items, which can compose a whole, in fact compose a whole.[3]

There may be further things that one might demand from an adequate mereology, but for the time being let these four desiderata be our criteria for determining whether medieval philosophers had a mereology.[4] I will now try to show that the common framework that underlies most medieval treatments of parts and wholes meets these four demands. If I am right, then we have good reason to believe that there is a medieval mereology.

First Desideratum

A mereology should tell us what types of part-to-whole relations there are. First, we should put the question in a manner that a medieval philosopher will understand. The formal systems that we have lumped together and called Mereology are logics of the relation __ *being a part of* __, or some similarly primitive mereological notion, such as

[3] Our desideratum is akin to what Peter Van Inwagen calls the 'Special Composition Question' (1987, 23–4).

[4] There might also be reasons to refuse to answer one or more of these desiderata. For example, Sanford argues that a 'naïve' mereologist should refuse to answer the Special Composition Question (1993, 224).

overlap or discreteness.[5] While medieval philosophers know that 'part' and 'whole' belong to the Aristotelian category of the relative (*ta pros ti*), they nonetheless prefer to talk about types of wholes and types of parts, and not types of part-to-whole relations. I make note of this difference only to put it to one side, since I think nothing important depends upon it.

The specific answer that a mereology gives to this first demand will depend upon whether that mereology is monistic or pluralistic. A *monistic* mereology claims that there is one notion of part, and accordingly one notion of whole. A *pluralistic* mereology claims that there are several, irreducible notions of part. A monistic mereology will need to give an account of what it is to be a part and what it is to be a whole. A pluralistic mereology will need to tell us what it is to be a part of type φ and what it is to be a whole of type φ—which I will hereafter abbreviate as part_{φ} and whole_{φ} respectively—for however many irreducible types the theory countenances. Classical Extensional Mereology is monistic: no matter what category of being x and y may happen to belong to, if it is true that x is a part of y, this means that x stands in one, unique relation to y.

In contrast to Mereology, medieval logicians and metaphysicians generally subscribe to some form of pluralism. Medieval philosophers talk about parts and wholes in any number of contexts. Sometimes medieval authors understand 'whole' to mean 'complete' or 'perfected'. Medieval philosophers get this sense of 'whole' from Aristotle.[6] In other contexts, 'whole' can have a distributive function (see below).[7] But medieval philosophers also get from Aristotle the sense of 'whole' as anything that is composed out of some things or that is divisible into some things.[8] It is this last sense of 'whole' that we will be most interested in.

The most sustained treatments of wholes *qua* composites or divisibles are usually, but not exclusively, found in medieval logical treatises. The proximate source in the Latin-speaking world for the division of 'whole' in this third sense is Boethius' *On Division*, where he divides composite items into (i) genera, (ii) universal wholes, (iii) 'potential'

---

[5] On the various primitives that one may use, see Simons 1987, 47–98, and Varzi 2003.

[6] *Metaphysic*s V.26, $1023^{b}26$–28.

[7] See Henry 1991, 65–72 and passim.

[8] *Metaphysics* V.26, $1023^{b}28$–29.

wholes, and (iv) integral wholes.[9] Boethius informs us that different parts correspond to these different wholes. The parts of the genus are the species. The parts of the universal whole are the individuals that fall under the universal. The parts of a potential whole, such as the soul, are the powers of that item. Not surprisingly, integral wholes can be divided into a variety of parts.[10]

> Given, then, that 'whole' is applied in these different ways, let us suppose first a continuous whole, the division of which should be into those parts of which it is observed to consist qua the actual whole (for otherwise the division is not accomplished). For you would divide a human body into the parts that are peculiar to it, the head, hands, chest, feet, or in any other way that makes a correct division in respect of the proper parts. Now the division of things whose compositional structure is multiplex is itself multiplex. For example, an animal is separable into those parts whose own parts are homogenous, into flesh and bones, but also into those whose own parts are heterogeneous, into hands and feet… Moreover, a whole is divisible into matter and form, for a statue consists in one sense of it peculiar parts, in another of matter and form, i.e. of bronze and a shape. Those wholes that are not continuous and those that are universal are to be divided in one and the same way, e.g. 'Of men some are in Europe, others in Asia, others in Africa.'[11]

Medieval logicians develop these remarks into a fairly standard division of divisions:

1. Genus into species
2. Universal whole into individuals
3. Potential whole into powers
4. Integral whole into integral parts
   a. Discrete integral whole into discrete quantitative parts (such as the stones that compose a pile or the geese that constitute a flock)
   b. Continuous integral whole into…
      i. substantial parts (substantial form and matter)
      ii. functional parts (such as fingers, skin, and hearts)
      iii. quantitative (or material) parts

---

[9] *De divisione* 887d–888a (Boethius 1998, 39).

[10] Again, the ultimate source of these different notions of part is Aristotle. See especially, *Metaphysics* V.25, $1023^{b}12$–25, and *Historia Animalium* I.1, $486^{a}5$–$487^{a}10$.

[11] *De divisione* 888a–c (translation from Boethius 1998, 39–41).

With these complications, there is also disagreement. The list that I have given suggests that substantial parts are a type of integral part. But some medieval thinkers insist that only parts that constitute some quantity can be integral parts. Hence, substantial parts cannot be integral parts.[12]

In later logical treatments of 'whole' there is a further complication. Many later medieval logicians offer this taxonomy of wholes:[13]

1. The universal whole
2. The integral whole
3. The whole in quantity
4. The whole in a respect (*in modo*)
5. The whole in place
6. The whole in time

The wholes that correspond to items (3) through (6) reflect the medieval realization that 'whole' (*totus/ -a/ -um*) can have a distributive function.[14] For example, the whole in quantity is the sense of 'whole' that acts as a quantifier ranging over individuals, as when I say that 'humans as a whole are rational', and the whole in a respect is the sense of 'whole' found in such propositions as 'the whole surface of the ball is white'. In the present context, we need not be detained by these distributive senses of 'whole'. We are interested in the applications of mereology to metaphysics, and hence we will focus our attention on the three basic substantival notions of whole and part that we find in medieval treatises. It is worth noting, however, that this latter logical division of 'whole' does not contain the notion of the potential

[12] See Lambert of Auxerre, *Logica* 1971, 126, Peter of Spain, *Tractatus* V, 14 (1972, 64); Walter Burley, *De toto et parte* 1966, 302; and Albert of Saxony, *Sophismata* 45 (Albert of Saxony 1490, 25rb–26vb). Aquinas's position is somewhat ambiguous. For example, in *Summa Theologiae* I, q. 76, art. 8, he distinguishes between quantitative parts and parts of the essence or ratio, but it is not clear whether these are species of integral part, or whether they are distinct types of part.

[13] Peter of Spain, *Tractatus* V.11–18 (1972, 63–67); Radulphus Brito, *Commentary on 'De differentiis topicis'* II, qq. 9–12 (1978, 44–53); Lambert of Auxerre, *Logica* 1971, 126–7; Buridan, *Summulae* 6.4.2–8 (2001, 421–39).

[14] In the thirteenth and fourteenth centuries, medieval logicians distinguished two distributive senses of 'whole', the *syncategorematic* sense and the *categorematic* sense (Kretzmann 1982). If one takes 'whole' to be a *syncategorematic* term, 'the whole x is φ' (*totus x est* φ) means that *each* part of x is φ. If 'whole' is a *categorematic* term, 'the whole x is φ' means that the *sum* of the parts that compose x is φ. Disambiguating these distributive functions of 'whole' was crucial for analyzing a number of sophisms, such as whether 'the whole Socrates is less than Socrates' (*totus Sortes est minor Sorte*) (William of Sherwood 1941, 54).

whole. This may be because a potential whole is of little interest to the logician. Or it may be that the logical behavior of a potential whole is reducible to one of the other types of whole.[15]

All of these complications and caveats should be expected in a tradition as rich as the medieval tradition. And for this reason, it would be more proper to say that there is a family of theories that we can call medieval mereology. This family of theories shares a common framework. In order to simplify matters, we will work with this basic framework as much as possible. Depending upon whose theory we are examining, there are either two or there are three basic types of object that are wholes. Let us work with the threefold division:

1. Subjective parts of universal wholes.
2. Potential parts of potential wholes.
3. Integral parts of integral wholes.

Subjective parts are only parts of a universal whole. Integral parts are only parts of an integral whole. Socrates can be an integral part of a crowd in the Agora, and he is a subjective part of the species Human Being. But Socrates cannot be an integral part of Human Being. There is all but universal agreement among medieval authors that these different kinds of part are irreducible. For this reason, I claim that medieval philosophers subscribe to a pluralistic theory of parts and wholes. Integral parts cannot be reduced to subjective parts. Potential parts are irreducible to either subjective parts or integral parts. The only obvious exceptions are the 'collection' theorists, who explicitly argue that universals are integral wholes and subjective parts are reducible to integral parts (see below).

We have seen that medieval philosophers can answer the first demand placed upon any mereology, and they answer by asserting a form of pluralism.

Second Desideratum

The three basic divisions between the kinds of parts and wholes are reiterated more or less in medieval treatments of the topics. Again, the one exception is that the potential whole is sometimes excluded. It is in the medieval treatments of the Topics that we find the clearest statements of some of the inferences that are warranted by the fact

[15] See, e.g., Lambert of Auxerre, *Logica* 1971, 130.

that some thing is a part$_{\varphi}$ of some other thing. For example, consider the topic *from the integral whole*. There are two *maximae propositiones* commonly associated with this topic:[16]

1. Whatever is predicated of the whole$_{integral}$ as a whole is predicable of its parts$_{integral}$.
2. If the whole$_{integral}$ is, the part$_{integral}$ is.

A maximal proposition, as understood by Boethius, is a self-evidently true, general proposition.[17] The explicit function of the maximal proposition is to help discover arguments. But in practice Boethius treats maximal propositions as warrants for arguments. Medieval logicians often followed Boethius' example and treated maximal propositions as warrants for arguments.[18] Hence, if I know that x is an integral part of y and that y exists, then I may infer that x exists.

It takes only a moment of reflection to see that these rules are not as obvious as Boethius and others claim them to be.[19] For example, if the second maximal proposition is read as a proposition ranging over all parts of an integral whole, it seems that we are forced to concede that Socrates' hand exists at every moment that Socrates exists.[20] But such considerations need not detain us any further. We are not asking whether the medieval theory of parts and wholes is correct. We are merely asking whether medieval philosophers give any rules for inferences or further facts that are warranted by the fact that something is a part$_{\varphi}$ of something else. Whether logicians use the three-fold division of wholes or the six-fold division, they routinely list the maximal propositions that are associated with these types of whole.

---

[16] See, for example, *Introductiones Montanae maiores*, MS Paris, Bibliothèque Nationale lat. 15141, f. 70ra, Abelard, *Dialectica* (Peter Abelard 1970, 343:33–344:17), and Peter of Spain, *Tractatus* V.14 (Peter of Spain 1972, 64).

[17] *De topicis differentiis* (*PL* 178, 1185A-B).

[18] See Stump 1978, 181–87; Stump 1982; Green-Pedersen 1984, 60–64; Ebbesen 1982, 112; and Martin 2004, 169.

[19] See, for example, the extremely interesting discussion by Radulphus Brito (*Commentary* II, q. 9 (Radulphus Brito 1978, 44–46)).

[20] For a formulation of this sort of puzzle, see Pseudo-Joscelin, *De generibus et speciebus* § 3 and § 19, and *Introductiones Montane maiores* MS Paris, Bibliothèque Nationale lat. 15141, ff. 71^{vb}–72ra. Abelard and the Nominales accept the conclusion of this line of reasoning (Arlig 2007 and Ebbesen 1999, 397).

Third Desideratum

We are now in position to turn to the first explicitly metaphysical question. What items can be parts? What items can be wholes? As it happens, both Mereology and medieval mereologists are quite liberal with regard to what items can be parts and what items can be wholes.

Some advocates of Mereology insist that their theory has nothing to say about ontology. But in so far as Mereology can be applied to ontological considerations, Mereology tells us that any item can be a part, and as a corollary, the theory tells us that any sum is a whole. If *x* exists and there is at least one other item *y*, then the sum *x and y* exists. And if the sum *x and y* exists, then *x* is a part of that sum. If the former conditional is fully general, we have a statement of what is often called Maximalism, or Universalism. We will return to consider the metaphysical implications of Universalism in the final section of this paper.

A wide variety of objects can be wholes: universals, souls, piles, flocks, artifacts, and Aristotelian primary substances are all wholes. Some philosophers accept that events and processes can be wholes. For example, Aquinas argues that the virtue of prudence and the act of penance have integral parts,[21] and Ockham thinks that complex mental acts are composed of parts.[22] All of these things can be wholes since they are divisible or composed. In short, our medieval authors will answer our third question this way: all the things that can be composers or products of divisions can be parts.

Fourth Desideratum

The fourth desideratum is that a mereology should give the conditions under which something, which *can* be a part of something, *is* a part of something else. If the mereology is pluralistic, the theory should give the conditions under which something is in fact a part$_{\varphi}$ of something else, for each basic type of part that the theory countenances. The thought behind this desideratum is the following: stones can be parts of houses, but many of us think that stones are only parts of

[21] *Summa Theologiae* II–II, q. 48, and III, q. 90, arts 1–3 respectively.

[22] *Quaestiones in Physicam* q. 6 (William of Ockham 1974–88, VI, 407–10); *In de Int*. I, prooemium 6 (William of Ockham 1974–88, II, 354–8).

houses when they stand in some appropriate relation to other potential house parts.

Again, if one applies Mereology to ontology, such a theory will say that *x* is a part whenever *x* and at least one other item exists, and correspondingly, a whole exists whenever a plurality exists.

It may seem that medieval mereology is equally generous as to when something actually is a part of something else. But while some medieval philosophers are open to the proposition that if *x* and *y* exist, then the collection of *x* and *y* exists, most medieval philosophers propose that something is a whole only in so far as it is a one.[23] Some will insist that things are only parts when they are actually separated from the whole. And many will follow a suggestion from Aristotle's *De Anima* and insist that some things are only parts of a whole when the whole exists.[24] Hence, for many medieval philosophers, composition is restricted, not universal. Even philosophers who accept something akin to Universalism will concede that a stone is not a part of this house until it and the other potential house parts actually take on the shape and structure of a house.[25]

Given the pluralism of medieval mereology, medieval philosophers owe us an explanation of the conditions under which something is in fact a part_{φ} of something else. This will be especially important in those cases where the same thing can play the role of two kinds of part. For example, the individual human being Andrew is both a subjective part of the universal Human Being and an integral part of the group of human beings gathered in this room.

The answer that medieval philosophers will give to the fourth desideratum will differ depending upon the precise metaphysical commitments that each one holds. Nonetheless, upon close examination, we will see a persistent theme in these disparate answers. All medieval philosophers subscribe to some version of hylomorphism. The ways that form and matter interact will often help to determine when some-

---

[23] Cf. Aquinas, *In Metaphysica expositio*, book V, lectio 21, nn. 1102–4; and Buridan, *Summulae de Dialectica* 8.1.4 (John Buridan, 2001 617–19).

[24] *De Anima* II.1, $412^{b}10$–22.

[25] Abelard insists that any two items can constitute a discrete integral whole (see *Dialectica* (Peter Abelard 1970, 548:18–21)). But Abelard is careful to distinguish between mere collections and objects whose parts are arranged (see, e.g., *Dialectica* (Peter Abelard 1970, 431:28–36 and 550:36–551:4), *Logica Ingredientibus*, Commentary on *Categories* (Peter Abelard 1919–33, 170:34–171:17).

thing is in fact a part$_{\varphi}$ of something else. Aquinas offers a fairly elaborate theory along these lines:[26]

1. x is a part$_{subjective}$ of y because the total essence and power of y is present to x.
2. x is a part$_{potential}$ of y because the total essence of y applies to x, but the total power of y does not.
3. x is a part$_{integral}$ of y because neither the total essence, nor the total power of y is present in x taken singularly.

In other words, x is in fact a part of y when an appropriate form imbues x (and some others). The manner in which the essence and power associated with a form imbues the parts will determine what sort of part it is.

Or consider this explanation for when something is a subjective part of something else, which is offered by an anonymous twelfth-century collection theorist (a.k.a. Pseudo-Joscelin). According to this author, 'Socrates is a human' is true because

1. Socrates has some trope φ,
2. 'Human' is the name of a collection Φ, where Φ is a mereological sum of tropes that are 'not dissimilar in creation from' φ, and
3. φ is a proper part of Φ.[27]

This helps Pseudo-Joscelin to explain why some integral parts of Socrates are not integral parts of the collection Human Being. Socrates is a human because Socrates has an H-trope that belongs to the integral whole composed of all the H-tropes. Socrates' hand does not possess the H-trope – it is not appropriately 'not dissimilar in nature'. Hence, even though Socrates' hand is an integral part of Socrates, Socrates' hand is not a subjective part of Human Being.

Interestingly, the criterion that some philosophers provide for when some things are parts of something else will lead them to assert that some putative wholes are in fact not true wholes and that some putative parts are not true parts. For example, some medieval philosophers were skeptical of the claim that the genus is a whole, and that the species is a part of the genus. In his *Isagoge* Porphyry sums up his treatment of the species with this remark:

---

[26] *Summa Theologiae* I, q. 77, art. 1; and III, q. 90, art. 3, *responsio*.
[27] Pseudo-Joscelin, *De generibus et speciebus* §§ 85–135.

> The individual is contained by (*periechetai hupo*) the species, and the species by the genus. For the genus is a whole of a sort (*holon ti*), and the individual a part. And the species is both a whole and a part, a part of one and a whole not of the other, but of others – since it is a whole for the parts.[28]

This is one of several passages that medieval thinkers drew upon when they asserted that a genus is a whole. But here is what Ockham says about Porphyry's claim.[29]

> Here it should be understood that the individual is not properly a part of the species, nor is a species properly a part of a genus. Nor is the opposite true. The reason for this is that a whole properly speaking is always composed out of what are properly said to be its parts. But a species is not composed out of individuals, and a genus is not composed out of species. Moreover, the species is not composed out of genera, the individual is not composed out of species, and nothing else is composed out of a species. Accordingly, none of these are properly parts of the other. Nevertheless, if we use the words 'whole' and 'part' in a figurative sense (*metaphorice loquendo de toto et parte*), then the species is a 'part' of the genus because according to this [figurative] mode a part is nothing other than that which is contained by something else and a whole is something common which contains both this and something else. And accordingly because a species is contained under a genus in so far as something less common is subordinated to something more common,[30] and the individual is contained under a species in so far as one determinate thing is signified by a species, accordingly it can be said that the individual is a part of a species and a species a part of a genus, and the genus is a whole of a sort (*quoddam totum*)[31] in relation to species and the species is a whole of a sort in relation to individuals. And in this way 'whole' and 'part' are used equivocally in different domains of philosophy (*in diversis locis philosophiae*).

For Ockham, *x* is a true part of *y* only if *x* helps to compose *y*. But Socrates does not actually help to compose either the species Human or the genus Animal. Genera and species, on Ockham's view, are merely

---

[28] Porphyry 1887, 7.27–8.3:

[29] Ockham, *Expositio in librum Porphyrii de praedicabilibus*, ch. 2, § 16 (William of Ockham 1978, 54).

[30] Cf. *Expositio*, c. 8, § 3 (William of Ockham 1978, 105).

[31] Porphyry's Greek reads '*holon ti*', which Boethius translates as '*totum quiddam*' (Busse, p. 33:12; *AL* I, 6–7, p. 14:8). The locution '*x ti*' is ambiguous. It could mean 'a sort of *x*' or 'an *x* of a sort'. Hence, Porphyry could mean that a genus is a kind of whole, or that a genus is somewhat like a whole. Clearly, Ockham reads Porphyry's text in the latter manner. A genus is like a whole in some respects, but strictly speaking a genus is not a whole.

simple concepts or acts of thought. No substance such as Socrates or my dog could compose a concept. They are the wrong kind of thing. For the same reason, concepts cannot compose substances. Hence, Socrates is not a part of Human, and Human is not a part of Socrates. Given that Human and Animal are simple concepts, they do not have parts. Hence, Human is not really a part of Animal, nor is Animal a part of Human.

Given that different medieval philosophers will give different answers to the third and fourth desiderata, it would be wrong to assert that there is a single medieval mereology. But it is clear that many medieval philosophers possess, or at least assume, something that meets the demands for being a theory of parts and wholes. Moreover, these theories possess an interesting family resemblance. In so far as they do this, I suggest that we can call this class of theories a medieval mereology.

As we have noted several times, medieval mereology derives its basic framework from Aristotle's treatment of parts and wholes. It should be clear from the textual evidence presented that medieval authors leave their particular mark on this Aristotelian framework. They not only develop a distinctive terminology; they arguably refine and systematize the material that they find in Aristotle's logical and metaphysical writings. Medieval mereology is, hence, a sub-class of the class of *Aristotelian* mereologies.

Do we Share a Common Mereological Framework with Medieval Thinkers?

One hallmark of medieval Aristotelian mereology is its pluralism. Given that medieval mereology is fundamentally pluralistic, one might wonder whether medieval mereologists are talking about the same thing that contemporary mereologists are interested in.

Some commentators of Aristotle have suggested that Aristotle's theory of hylomorphic composites employs a notion of a component or element that is not a *part* in the Mereological sense of the term.[32] Indeed, some commentators have balked at the idea that essential parts are really parts or constituents at all.

[32] This line has most recently been promoted by Loux (2006, 214–15).

> 'Constituent' is no doubt an unhappy word: it is because matter and form are not, in the ordinary sense, constituents that no question arises as to how they combine into a unity. We might speak of the material 'aspect'. To speak of a composite qua material or in its material aspect is to refer to some material whose identity as that material does not depend on its being so shaped or in-formed.[33]

Ackrill's worry is that if form and matter were truly constituents, and the composite truly a whole, then we would need an account of the unity of this whole. But Aristotle famously asserts that the union of form and matter is the truest kind of unity that one can find in the material world.

> Hence, if we must state what is common to every soul, then it would be that it is *first actuality of a physical body possessing organs*. And for this reason there is no need to ask whether the soul and the body are one, just as there is no [reason to ask whether] the wax and the image [are one], nor in general whether the matter of something and that of which it is the matter [are one]. For 'one' and 'being' are said in many ways, but actuality is most properly [one and being].[34]

Interestingly enough, Aristotle's assertion that the union of a substantial form and its matter is the strictest sort of material unity prompted a grand debate in the Scholastic period between those who, on the one hand, subscribed to an 'anti-reductionist' theory of hylomorphic composites and those who, on the other hand, asserted that the hylomorphic composite was nothing other than its substantial form and matter.[35] Anti-reductionists, such as Duns Scotus, thought that there must be a further principle, in addition to the substantial form and the matter, which explains the unity of the composite substance. Otherwise, he argued, the composite consisting of the form and matter would have a unity appropriate to an aggregate (e.g. a crowd or pile of stones) or, at best, the sort of unity that an artifact has, namely, an accidental unity. Reductionists, such as Ockham, argued that the substantial form and the matter by themselves were sufficient to make a composite substance and to give that substance the sort of unity appropriate for a substance, and not for an aggregate or for an artifact.

---

[33] Ackrill 1972–3, 124–25. For a reply to Ackrill, see Haslanger 1994, esp. 131–42.
[34] Aristotle, *De Anima* II.1, 412^{b}4–9.
[35] See Cross 1995 and 1999, and Normore 2006, 744–47.

Now as one commentator on this debate has observed, the debate between the anti-reductionists and the reductionists is one that might not get off the ground if we refused to think of form and matter as constituents.

> If we ask how Aristotelian the whole debate is, however, I suspect that we will immediately have to face the possibility that Aristotle does not think of matter and form in this way at all. For Aristotle, part of the point of the matter-form analysis is that a substance just is matter with form, such that the only object is the substance, and the only properties are the form. Compared to this sort of analysis, the views of both Scotus and Ockham involve an account of substance that makes substance considerably more complex than in Aristotle's account.[36]

One lesson that we could draw from all of this is that many medieval thinkers fundamentally misunderstood Aristotle. But I prefer to draw another, compatible lesson. If we put aside the question whether the medievals understood Aristotle well, we can see that the debate between the reductionists and the anti-reductionists indicates that these thinkers were thinking of matter and form as if they were truly parts, and they framed both the question of the unity of the substance and their answers to this questions in terms of what they thought were possible principles of unity for *wholes* consisting of *parts*.

If we can show that medieval thinkers had the same fundamental intuitions and conceptions of parts and wholes that we have, then the debate between the anti-reductionists and the reductionists ought to be of great interest to us. Their debate would be equivalent to current disagreements over whether a whole is something 'over and above' its parts.

Fortunately, I think that there is a fundamental sense in which medieval mereologists share many of our deepest fundamental conceptions about parts and wholes.

Finding a Common Approach to the Study of 'Part' and 'Whole'

One way to determine whether we and medieval thinkers share a common understanding of the notion of 'part' is to examine some of the

[36] Cross 1999, 167.

propositions that are putatively entailed by the claim that something is a part of something else. In other words, we could see whether we can find assertions of the form 'If *x* is a part of *y*, then _____.' Or, if we cannot find explicit proposals fitting this schema, we should look for positions that entail such assertions.

When we do this, we should take care to isolate propositions that hold for all true parts, and not merely for some set of true parts. For example, suppose that someone proposed the following as a proposition that is true of all parts:

> If *x* is a part of *y*, then if *y* occupies some region of space *R*, then *x* occupies some portion of, but not all of, *R*.

Many of the parts that we typically encounter in our everyday life – such as the spokes of the bicycle, my dog's tail, the slices of bread in my sandwich, and so forth – do obey this rule. But matter and form do not obey this rule. If a hylomorphic composite occupies *R*, then the matter occupies *R*, all of it. Likewise, if a form can be said to occupy any region of space at all, the form must occupy all of *R*. In other words, anywhere that the object is, the matter and the form are wholly present there. Now, some might argue that this is why matter and form are not parts. They may be 'non-mereological constituents', 'aspects', or 'principles' of the hylomorphic object, but they are not 'parts'. I would caution the reader from embracing such a position, since it seems to saddle a theory of parts *qua parts* and wholes *qua wholes* with features that may apply only to material parts and material wholes.[37] But surely many immaterial objects are complex, and hence, should have parts in the sense of components. Statements have subjects and verbs. The acute triangle has sides and angles. And if one believes in structural universals such as Methane, then universals can have parts.[38]

A better approach, especially considering the pluralism of medieval mereology, would be to find a broad, generic notion of parthood. An attractive generic notion of parthood is offered by Peter Simons, the author of one of the authoritative contemporary treatments of parts

---

[37] This might be the response that one should give to several of the ingenious arguments that Ruben employs to show that individual persons are not parts of social entities. For example, he argues, French people cannot be parts of France (1983, 223).

[38] Armstrong believes in them (1997, 31–38). For a criticism of structural universals, see David Lewis (1986, and 1991, 78–9). In reply to Lewis, see Forrest 1986.

and wholes. Simons thinks that there is a 'formal skeleton' that is common to all our notions of 'part'.[39] All parts conform to these rules:

> *Asymmetry*: If *x* is a part of *y*, then it is not the case that *y* is a part of *x*.
> *Transitivity*: If *x* is a part of *y* and *y* is a part of *z*, then *x* is a part of *z*.
> *Supplementation*: If *x* is a part of *y*, then there is at least one item *z* such that *z* is a part of *y*, and *x* and *z* do not share any parts.
> *Falsehood*: If *x* is a part of *y*, then *x* exists and *y* exists.

It should be added that this formal skeleton applies to 'part' understood as a proper part, where a proper part is distinguished from an improper part. Improper parts violate asymmetry, since everything is an improper part of itself.[40] However, nothing too great hangs on this caveat, since I know of no medieval author who endorses the notion of an improper part.

In what follows, I will try to make a brief case, based on a few test cases, for the claim that most parts countenanced by medieval mereologists conform to Simons' skeletal formal structure. Even if space were not a concern, I would be unable to prove that every notion of part offered by every medieval philosopher conforms to Simon's structural specifications. Indeed, it is more likely than not that there is some philosopher who takes exception to at least one of these four specifications.

Let us begin with the easy ones and move toward the most difficult test cases.

Asymmetry

It seems that no Aristotelian part violates Asymmetry. Socrates is a subjective part of Human Being, and Human Being is a subjective part

---

[39] Simons 1987, 362. One should compare this framework to Ted Sider's recent 'picture of parthood' (2007, 70). One could quarrel with some of Sider's theses. For example, it would follow from 'Inheritance of location' (If *x* is part of *y*, then *y* is located wherever *x* is located) that either individual French people are not parts of France, or that France can be partially located in New York City (since there are plenty of French citizens living in this city). And it would follow from 'Inheritance of intrinsicality' (If property P is intrinsic, then the property *having a part that has P* also is intrinsic) that there are no emergent intrinsic properties.

[40] In a paper co-authored with Dement, Simons presents a different formulation of the structural specifications (1996, 262–3). They start with a notion of improper part and they add a relation to time. Asymmetry is replaced by Reflexivity, which states the following: if *x* exists at *t* then *x* is a part of itself at *t*. On the notions of proper part and improper part, see Simons 1987, 9–11.

of Animal. But it is not the case that Animal is a subjective part of Human Being, or that Human Being is a subjective part of Socrates. Nor is the body an integral part of the hand, or the soul a potential part of the rational power.

Cases where Asymmetry seems to be violated can be easily analyzed away as cases of equivocation. For example, Boethius notes that in one sense the species is a part of the genus, and in another sense the genus is a part of the species.[41] But this is not a violation of Asymmetry. Human Being is a subjective part of Animal, and Animal is what we might call a *definitional* part of Human Being. It is not clear whether a definitional part is a type of integral part, or whether it is a fourth basic type of part.[42] But in any case, medieval philosophers all agree that a definitional part is not a subjective part. But it is not the case that Animal is a subjective part of Human Being, or that Human Being is a definitional part of Animal.

Transitivity

It is also fairly easy to show that most, if not all, Aristotelian parts honor Transitivity. Transitivity holds for subjective parts. That is, if Socrates is a subjective part of *S*, and *S* is a subjective part of *G*, then Socrates is a subjective part of *G*.[43] For this reason, the relation between a subjective part and a universal whole is a part-whole relation, and not an element-class relation. Subjective parthood is transitive, whereas being an element of a class is not. Hence, we should be careful in dismissing talk of subjective parts and universal wholes as a primitive form of class theory.[44]

While medieval philosophers are not as explicit about this, Transitivity presumably holds for potential parts. At the very least, I see no reason why any medieval Aristotelian would object to the claim that if *P* is a potential part of the rational power, then *P* is also a potential part of the soul.

When we turn to integral parts, Transitivity is explicitly endorsed by a number of medieval philosophers. For example, Abelard employs

---

[41] *De Divisione* 887c (Boethius 1998, 38:1–10).

[42] Aquinas calls both matter and form, and the genus and *differentia* 'parts of an essence' (*Summa Theologiae* I, q. 76, art. 8; and I, q. 8, art. 2, ad 3).

[43] See Aristotle, *Categories* 3, $1^{b}10$–15.

[44] *Pace* Henry 1991, 36–38. Cf. Mignucci 2000.

Transitivity to undermine the thesis that a species is an integral whole. According to Abelard, the collection theory offers this explanation of what it is to belong to a species, or natural class:

1. *a* belongs to the species F (i.e. *a* is F) because *a* is a proper part of Φ, where Φ is a mereological sum of particulars.

But if that is true, then it seems that Socrates' hand belongs to the species Human Being.

2. Socrates belongs to the species Human Being (i.e. Socrates is a human being) because Socrates is a proper part of Φ.
3. Socrates' hand is a part of Socrates.
4. But by Transitivity, Socrates' hand belongs to Φ.
5. Hence, Socrates' hand belongs to the species Human Being (i.e. Socrates' hand is human).

But that is clearly absurd.[45]

Interestingly enough, we have already seen a rejoinder to Abelard's criticism by Pseudo-Joscelin, one that reduces subjective parthood to integral parthood without violating Transitivity.

It is worth observing that some contemporary critics of Mereology have attacked the claim that parthood is essentially transitive. Rescher, for example, proposes these counterexamples: persons can be parts of small military units, and small units are parts of large units, but persons are not parts of large military units; likewise, a biological sub-unit of a cell is not said to be a part of the organ.[46] David Sanford repeats these counterexamples and adds this one:

> There are many examples of nontransitivity in which only one of the premises concerns membership. My spleen is part of me, and I am part of this Book Symposium, but my spleen is not part of this Book Symposium.[47]

Perhaps these are true counterexamples. Perhaps these claims can be paraphrased into sentences that refer to true parts. It turns out that some medieval thinkers had the conceptual resources to perform the latter, and thereby preserve Transitivity. Peter Abelard, for example,

---

[45] This is only one of several problems that Abelard poses for the collection theory (*Logica Ingredientibus*, Commentary on *Isagoge* (Abelard 1919–33, 14:32–15:22)). Cf. Freddoso 1978, Henry 1984, 235–59; and Tweedale 1976, 113–115.

[46] Rescher 1955, 10.

[47] 1993, 221.

might analyze Sanford's alleged counterexample in this manner: Sanford's spleen is part of the thing that is Sanford, and the thing that is Sanford is part of the thing that is the Book Symposium; nevertheless, there is a sense in which the thing that is the Book Symposium is not identical to the Book Symposium. According to Abelard's theory of sameness, the thing that is (currently) the Book Symposium is the same in *essentia* as the Book Symposium, but they are different in 'property'. Therefore, while it is true that Sanford's spleen is part of that thing that is the Book Symposium, we are entitled to resist the claim that the spleen is a part of the Book Symposium simpliciter.[48]

Supplementation

We find explicit endorsements of positions that at least entail Supplementation in medieval treatments of parts and wholes. Abelard, for example, rejects the notion that temporal entities such as hours, days, and years are *wholes*, since it is constitutive of temporal entities that only one 'part' exists at any moment.

> But if we fully acknowledge the real truth (*rei veritatem*), in no way does it happen that this [temporal entity] is properly composed by *parts*. For no composite is constructed by one part, since there can be no part which the quantity of the whole does not surpass.[49]

Abelard goes on to assert that if the temporal entity were composed by one part, then that one part would be the same as the whole. Presumably, Abelard takes this to be absurd because he is assuming Supplementation. Hence, if the minute is a part of the hour, then it cannot be the same as the hour. The hour must be this minute plus other, non-overlapping minutes.

The same assumption is used by a number of philosophers to demonstrate that God is not a body.[50] All bodies are divisible. But if something is divisible, it will have parts, for to divide something is to make at least one part, and if one creates a part of x, then there will be at least one other thing that is also a part of x (Supplementation). So, if

---

[48] On sameness in *essentia* and difference in property, see Abelard, *Theologia Christiana* III, §§ 139 ff. (Peter Abelard 1969, 247 ff.). For discussion, see Brower 2004; King 2004, 85–92; Arlig 2005, 165–97; and Marenbon 2007.

[49] Peter Abelard, *Dialectica* (Peter Abelard 1970, 554:14–16). For more discussion of Abelard's rejection of the wholeness of temporal items, see Henry 1991, 139–51; and Arlig 2007, 220–23.

[50] See, e.g., Maimonides, *Guide of the Perplexed* II.1 (1963, 251).

God were a body, God would have parts. But if God had parts, God would depend upon His parts. That is absurd. Therefore, God is not a body.

Supplementation also seems to be assumed in Avicenna's discussion of the quiddities (i.e. essences) of composite substances.

> Form is always part of the quiddity in composite things, while the form of every simple [thing] is also identical with it because there is no composition in it. In the case of composites, however, neither their forms nor their quiddities are identical with themselves. As for forms, it is obvious that it is part of it. As for the quiddity, it is that by which it is what it is; and it is what it is only by virtue of the form being connected with matter, which is something additional to the meaning of form.[51]

The form is only a part of the quiddity because there is something in addition to the form which makes the composite subsistent. Indeed, Avicenna suggests that the form would not be a *part* unless there were something in addition to the form that made the composite subsistent.

It appears, then, that most Aristotelian parts conform to Supplementation. Indeed, in the cases where Supplementation seems to fail, it turns out that there is also disagreement among medieval thinkers as to whether these alleged parts really are parts.

The one potentially glaring exception to Supplementation is the claim that the species is a part of the genus. In his *On Division*, Boethius claims that unlike a part in relation to its whole, 'the species is the same as its genus' (*species idem semper quod genus est*).[52] It is not entirely clear what Boethius means when he claims that the species is the same as the genus, but it is not obvious that the relation is numerical identity. Porphyry suggested that the genus is like matter and the species is like the composite.[53] In the case of a material object, the matter has all the same material parts as the composite. But the matter is not numerically identical to the composite, for the composite possesses a part that is not a part of the matter, namely, the form. Likewise, the species and the genus may coincide 'materially', yet there is something that the genus lacks which the species has, namely, the specific *differentia*.[54] If this line of reasoning is correct, then we can

---

[51] Avicenna, *Metaphysica* V, 8 (translation from Avicenna 2005, 187–88).
[52] *De divisione* 879D (Boethius 1998, 15).
[53] *Isagoge* (Porphyry 1887, 11:12–17, 15:32–33).
[54] One might object that forms and *differentia* are not parts. But even though medieval philosophers will sometimes reserve the term 'part' (*pars*) to designate some

make sense of the claim that the species is the same as the genus without violating Supplementation.

Those medieval thinkers who thought that genera were wholes that can be identical to one part were vulnerable to an argument based on a premise that looks a lot like Supplementation. We know that there was a discussion in the thirteenth century over what would happen if the species that fell under a genus were suddenly reduced to only one. Some felt that if, say, Animal were reduced to Human, then Animal would be preserved with respect to its reality and essence, but it would lack the *ratio* of a genus. But, interestingly, Radulphus Brito thought the opposite must hold: if Animal were reduced to Human, it would retain the *ratio* of a genus, but it would not be preserved with respect to its reality and essence.[55] The genus, he reasoned, cannot be preserved in one species because 'this hypostasis, to which the *ratio* of a genus is attributed, are many species.'[56] Notice that either Supplementation or something very akin to Supplementation is at work in this highly compressed argument. The thing that is a genus must be something consisting of many species. Hence, if the species were reduced to one species, the genus could no longer be something consisting of many species—that is, it could no longer be a whole. Hence, the genus would not be preserved in its reality if such a reduction were to occur.

But suppose that the relation of the species to the genus does violate Supplementation. That would be a good reason to reject the notion that a genus really is a whole, and that a species really is a part. We

---

sub-class of composers or products of division (usually the material parts), it is clear that all composers and products of division obey Supplementation. Return to the claim that God is not a body. After medieval philosophers draw this conclusion, they usually press on and demonstrate that God is not complex in any manner whatsoever. (See, e.g., Anselm, *Proslogion* 18; Al-Farabi, *Principles of Existing Things* I, §§ 21–25 (McGinnis and Reisman 2007, 88–89), Avicenna, *The Salvation (an-Najât), 'Metaphysics'*, II.5 (McGinnis and Reisman 2007, 214), Aquinas, *Summa Theologiae* I, q. 3, aa. 2–7.) God does not have material parts, He does not have form and matter, He does not have definitional parts (i.e. genus and *differentia*), He is not even divisible with respect to His essence and existence. This is because if He is complex in any way, He is divisible in that respect. But if God is divisible, God is divisible into components (emphasis on the plural). From this it would follow that God depends upon His components. Yet, this is impossible.

[55] Radulphus Brito, *Quaestiones super Isagogen Porphyrii*, q. 13 (in Roos 1974, 336). I thank Sten Ebbesen for pointing me to this discussion and providing the reference to Roos.

[56] The translation mimics the awkwardness of the Latin: ista hypostasis, *cui ratio generis attribuitur, multae* sunt *species* (Roos 1974, 340).

have already seen, for different reasons, that Ockham is willing to reject the wholeness of genera and species.

Falsehood

We can find numerous endorsements of Falsehood or propositions that entail Falsehood in medieval discussions of mereology. For example, in his treatment of the differences between universals and wholes, Avicenna notes that the whole requires that all its parts be present simultaneously, whereas the universal does not require that all its particulars be simultaneously present.[57] The reader should also recall the second maximal proposition associated with the topic from the integral whole: if the integral whole is, then the integral part is. When contemplating the validity of this maximal proposition, Buridan begins by defining the integral whole and then observing that given the integral whole consists of its parts, the parts must exist if the whole exists.[58]

There seems to be one troublesome exception to the general medieval endorsement of Falsehood. Many medieval thinkers, following suggestions that they find in Aristotle, believe that when the composite substance actually exists, then matter does not actually exist. Aquinas provides a notable illustration of this thesis.

> The parts out of which the whole is constituted can exist in the whole in two ways: (1) potentially, (2) actually. The parts exist potentially in the continuous whole, but actually in a whole that is not continuous, just as the stones actually exist in the pile. Moreover, the continuous is more one, and consequently more whole, that the one that is not continuous.[59]

But it seems to me that Falsehood is, nevertheless, true of form and matter. In a material substance, the form cannot be the only component. Otherwise, the material substance would be only a form—that is, an angel or some other immaterial substance. To the contrary, the matter is an additional component (see Avicenna's remarks above about the quiddity of a material substance). It may not be present in actuality. But it is present, potentially, and not merely potentially in

---

[57] *Metaphysica* V.2.10 (Avicenna 2005, 161–2). Notice that, by implication, a universal is not a true whole. But as we have seen, this would be a proposition that many medieval philosophers would be willing to concede.

[58] *Summulae* 6.4.4 (2001, 427). Cf. Radulphus Brito *Commentary* II, q. 9 (1978, 45).

[59] Aquinas, *In libros Metaphysicorum Aristotelis expositio*, book V, lectio 21, n. 1102.

the sense that I potentially have a million dollars in my bank account. My bank account can subsist even if I never earn a million dollars. I cannot subsist if the matter in me never can exist in actuality. In other words, my matter exists. Otherwise, there would be no distinction between something that has matter potentially and something that has no matter whatsoever. Potential existence is a weak sort of existence, but it is existence nonetheless. Hence, if matter is a part of the hylomorphic composite, then the matter exists (albeit potentially) and the composite exists (actually). This seems sufficient to show that a modified version of Falsehood holds for not only form, but also for matter.

If that argument does not satisfy, one could always consider this line of reasoning, which also seems to show that medieval notions of parthood presume something like Falsehood. The motivation for the claim that some parts are potential when the substance actually exists seems to be this: *x* is a unified thing – that is, *x* is one. But the parts are many. If *x* is its parts, then *x* is many. Hence, *x* is both many and one.[60] The solution is to consider the nature of the unity of *x*. In the case of something like a crowd, the unity is fairly weak. Indeed, it is so weak that the unity is accidental.[61] In the case of a substance, the unity that arises from the combination of form and matter is, as Aristotle reminds us, the most proper sense of 'one' that there is.[62] Notice how Falsehood is being presupposed. In so far as the parts are actual, the unity is weak and accidental. In so far as the parts are potential, the unity is strong and substantial. These substantial unities are truly one because there are not many things there. In particular, the bits of earth, air, fire, and water that make up the animal exist only potentially while the animal exists. These elemental bits do not now exist. So, by Falsehood, these elements are not parts of the animal. Hence, the animal is not many.

In sum, it appears that many Aristotelian parts obey the four formal rules that, according to Simons, all true parts must obey. If the reader thinks, as I do, that these rules provide a sufficiently general account of parthood, then is appears that there is a sense in which medieval mereology and contemporary mereology share the same subject matter.

---

[60] For a succinct statement of this puzzle, see John Philoponus, *Opuscula Monophysitica* IV, § 1 (1930, 126).

[61] See, for example, Aquinas, *In Metaphys*., V, lectio 21, nn. 1102–4; and *Summa Theologiae* I, q. 76, a. 8.

[62] Aristotle, *De Anima* II.1, 412^{b}8–9 (quoted above).

Note, however, that I am not suggesting that medieval mereology is at bottom monistic. It is true that many types of part possess the basic structural features of the skeletal notion of parthood suggested by Simons. But this does not entail that these parts are reducible to this basic notion of 'part' anymore than the fact that all species share the definition of the genus entails the species are reducible to their genus. Indeed, I would suggest that the specifications provided by Simons function much like the definition of a genus. A genus spells out some of the structure of its species, but it does not spell out the complete structure of the species. The genus needs the *differentiae* to complete the species. Likewise, the varieties of part_{φ} countenanced by medieval philosophers share a common underlying set of properties, properties that make them all parts, but they are different types of part because still more properties must be provided to spell out the difference between being, say, a $\text{part}_{integral}$ and being a $\text{part}_{potential}$.[63]

On the Benefits of Comparing Mereologies

Aristotelians and contemporary mereologies share a common, skeletal notion of parthood. Because they share this common skeletal notion of part, I think that medieval Aristotelian mereology can be compared with Mereology. This means that there may be times when it is appropriate and profitable to employ the tools of Mereology in order to make sense of some medieval mereological doctrine. It also means that medieval mereology is an example of a systematic account of parts and wholes that stands in opposition to the monism of Mereology. As I will suggest below, Mereology is not as neutral as it claims, and for this reason there is a significant price that must be paid by those who embrace the notion of parthood embodied in Mereology. If the reader is troubled by the price that she has to pay, medieval mereologies might provide a model for how she can develop an alternative metaphysics of parts and wholes.

It is often claimed that Mereology is ontologically neutral. It works equally well with whatever objects exist, and it makes no assumptions or determinations about what things exist. But, in fact, it is not entirely clear that Mereology is neutral with respect to ontology. Peter Forrest, for example, has argued that Mereology is incompatible with

[63] See Simons 1987, 364; and Simons and Dement 1996, 267–75, esp. 273.

one empirical hypothesis about the nature of space.[64] Accordingly, if we claim that Mereology provides a fully general account of the relations between parts and wholes, we must reject for *a priori* reasons a thesis about space which should be rejected (if at all) for *a posteriori* reasons.

Forrest's concerns aside, there is a more general worry about the putative neutrality of Mereology. Mereology provides a formal systematic account of the relation _ « _. The predicate '_ « _' is normally interpreted as '_ is a proper part of _'.[65] But if Mereology is a purely formal system, we cannot be sure that it is a system that articulates the relations that stand between things and those items that either compose them or are divided from them. Simons and others have argued the logic of the '«' relation does not capture our ordinary beliefs, or even all of our theoretical beliefs, about things, their composers, and their divisions. At best, Mereology captures the relations that obtain between masses and their portions, aggregates and their members, and other items that we might, for convenience, label as matter.

Hence, philosophers are faced with a choice:

I. We can modify our logic of the '«' relation so that it can systematize our beliefs about things and their parts, but thereby import metaphysical and physical assumptions into what was initially an ontologically neutral system.
II. We can claim that if something exists and this thing is a part or a whole, then this thing must behave according to the axioms and theorems of Mereology.
III. We may maintain Mereology's purity and neutrality, but with the cost that the relation _ « _ no longer captures the logical relations that obtain between things and all their parts.

The only way that the Mereologist can maintain neutrality is to embrace option (III). But if we embrace option (III), our theory no longer has a clear application to ontology. In so far as we are interested in the metaphysics of parts and wholes, Mereology would be of little or no use.

---

[64] Forrest 1996.
[65] On the notational jungle, see Simons 1987, 98–100.

If the Mereologist chooses option (II), she is no longer taking a neutral stance in metaphysics, even if she claims that she is doing the opposite. David Lewis, for example, insists that Mereology is entirely innocent.[66] Indeed, he takes this innocence to be something that goes hand in hand with neutrality. Mereology, in Lewis' view, does not determine what there is. Yet, once one does determine what there is, Mereology tells us that there are sums of those things. If Abelard and Heloise exist, then the sum of Abelard and Heloise exists. Lewis assumes that Universalism is an axiom of Mereology, and in his view, Universalism makes no further existential assumptions over and above one's starting ontological assumptions. That is, if you believe that Abelard and Heloise exist, then you get the sum of them, that is, the sum of Abelard and Heloise, for free.

But there are reasons to doubt that Mereology is innocent.[67] First, it seems to me that Universalism in fact does make further existential assumptions. The Universalist and his opponent disagree about the number of things in the universe. Where a non-Universalist might count only *n* things in the universe, the Universalist claims that there are 2^n -1 things. It is hard to see how this is not a real ontological dispute, unless one believes that there is no fact of the matter as to who is right.[68]

Second, Mereology seems to eliminate entities. Let us grant that the sum of Abelard and Heloise exists, if Abelard and Heloise exist. Does this mean that Abelard and Heloise constitute a *whole*? According to David Lewis, sums are wholes, and the only mode of composition is mereological summation. Yet, it is far from clear that summation is the only mode of composition. Sets and ordered pairs are complex items with elements (i.e. parts), yet neither the set {1, 2} nor the ordered pair <1, 2> are identical to the mereological sum of 1 and 2. States of affairs such as John loving Jane are complex and have parts, yet the state of affairs John loving Jane is not identical to the mereological sum of John, Jane, and loving. And perhaps more controversially 'structural' universals, such as Methane, which is a composite of the simple(r) universals Carbon and Hydrogen, has parts but Methane is not

[66] Lewis 1991, 75–87.

[67] For some arguments against Universalism, see Van Inwagen 1985, 35–40; Simons 2006, 600–4; Hudson 2006; and Markosian 2008.

[68] As it happens, Hilary Putnam has concluded that there is no fact of the matter in disputes like this. For discussion, see Sosa 1993.

identical to the mereological sum of Carbon and Hydrogen. Indeed, a particular methane molecule is not identical to the sum of one particular carbon atom and four hydrogen atoms (the atoms have to be bonded together to be a methane molecule). In short, these three claims are logically incompatible:

1. If sets (ordered pairs, states-of-affairs, structural universals, methane molecules, etc.) exist, then there is a mode of composition that is not summation.
2. There is no mode of composition that is not summation.
3. There are sets (ordered pairs, states-of-affairs, structural universals, etc.).

One might assert, as Lewis does on a number of occasions, that (1) and (2) are true, hence so much the worse for states-of-affairs and structural universals.[69] But one could accept (1) some version of (3), and hence reject (2). This is what David Armstrong and Peter Forrest recommend that we do.[70]

This is not the place to determine which position is correct. What is important for our purposes is that because Mereology acknowledges no mode of composition other than summation, Mereology entails that some items exist and some do not. And hence, the upshot of these considerations is this: you may choose option (II).[71] But you cannot claim that your choice is an innocent one. You are, in fact, taking a stance on what there is.

Suppose that you are satisfied neither by the notion that there is only one mode of composition nor with Universalism. You could deny that composition ever occurs (which amounts to claiming that nothing is ever a part).[72] But most of us, I will wager, would like to cleave to a middle ground: sometimes composition occurs and sometimes it does not occur.[73] These atoms compose me (at least for a moment of

---

[69] Lewis 1986a, 1986b, 1992. Sets earn their keep because it is hard to do mathematics without them. For Lewis' response to counterexamples like the methane molecule, see Lewis 1991, 78–9.

[70] Forrest 1986; Armstrong 1997, 31–38.

[71] Indeed, there may be compelling reasons to do this. For example, if you embrace Universalism your ontology need not be anthropocentric (Sider 2008). You can also resolve certain problems concerning vagueness (Sider 2001, 120–39; Sider 2008; and Van Cleve 2008, 326–31).

[72] Van Inwagen 1987, 34–35.

[73] For a survey of some of the ways one might restrict composition see Van Inwagen 1987 and Markosian 2008.

time), but these atoms and the Eiffel Tower do not compose anything at all – or, at least, while they may form a sum, they do not make a *thing*, or *individual*.[74]

Here is where an Aristotelian metaphysics and, consequently, an Aristotelian mereology might become attractive. While we may not embrace all the metaphysical assumptions that Aristotelians make, Aristotelian mereology – and especially medieval Aristotelian mereology – provides us with a model of how one can develop a theoretically rigorous and pluralistic mereology along the lines of choice (I).

Medieval mereology is unapologetically constrained by metaphysical and physical principles. For an Aristotelian, mereology will account for, among other items, the relations between form, matter, and their composite (i.e. substantial parts and their wholes), functional parts and their whole, and the powers of a potential whole and the whole of which they are powers. This is because medieval philosophers – yes, even those of the nominalist persuasion – are committed to the existence of primary substances, matter, form, and souls.[75] Contemporary metaphysicians may be uneasy about some of these entities; yet, they will need to build some metaphysical and physical assumptions into their mereologies if either they want to reject Universalism, or they want to embrace different modes of composition.[76]

One of the benefits of doing the history of philosophy is that it gives us the opportunity to bracket some of our most cherished assumptions. The way that medieval philosophers approach a particular set of problems might help us to see something that was not obvious beforehand. Medieval Aristotelian mereology provides an alternative model for how we can develop a comprehensive logic and metaphysics of parts and wholes. It is little wonder, then, that Aristotelianism is still considered to be a viable option in contemporary metaphysical debates.[77]

---

[74] Although, see Van Inwagen's argument that every thing that is composite is a sum, and hence, sums are not a special kind of composite thing (2006).

[75] See Cross 1999, Pluta 2001, King 2004, Normore 2006, and Arlig 2007.

[76] For a theory that relies upon a deflationary account of form see Johnston 2006.

[77] For a sample of current work that is inspired by Aristotelian mereology see Simons 1987, the articles included in Oderberg 1999, Fine 1999, Lowe 1999, Johnston 2006, and most recently Koslicki 2008.

ON FORMALIZING THE LOGICS OF THE PAST

Paul Thom

Among the methodologies employed by historians of logic, formalization occupies a controversial place. Catarina Dutilh Novaes distinguishes three distinct activities that are commonly labelled 'formalization'. These are axiomatization, symbolization, and what she calls conceptual translation into a given formal theory.[1] In this chapter I examine some of the dangers that attend the use of these three practices in studying the logics of the past, and I argue that when used with due care each of them can lead to illuminating interpretations.

Axiomatization

To axiomatize a set of propositions is to identify some propositions (which may or may not be expressed within that set) from which all members of the set can be deduced in accordance with certain rules. It is thus to find, or to impose, a certain deductive order among the set's members. Dutilh Novaes argues that this practice deserves the title of formalization because axiomatization regiments its material in accordance with explicitly stated rules, thereby enabling deductive links to be displayed using mechanical algorithms.[2]

This is a fair characterization of axiomatization as practised by mathematical logicians. However, axiomatization has a history going back to antiquity. Both Aristotle and Euclid aimed (in Martha Kneale's words) 'to construct a deductive system with a small number of axioms and those the most 'natural'.'[3] Many a philosopher and many a mathematician since then has thought of axiomatizing many a field of knowledge. And while their aims have always been to display deductive order in the axiomatized material, it doesn't follow that they aimed to present their material in a purely formal way, let alone that

[1] Dutilh Novaes 2007, 216.
[2] Dutilh Novaes 2007, 245–247.
[3] Kneale and Kneale 1962, 79.

they wanted to allow for the mechanical proving of theorems. Viewed historically, axiomatization has had different aims in the hands of different practitioners and at different periods.

Why would a modern historian of ancient or medieval logic want to axiomatize the material at hand? The answer must take into account the nature of the interpretative enterprise in which the individual historian of logic is engaged.

Consider Jan Łukasiewicz's classic axiomatization of the Aristotelian syllogistic. Łukasiewicz approached his task 'from the standpoint of modern logic'. Not surprisingly, then, his axiomatization was based on fourteen laws of propositional logic, and rules of substitution and detachment – all drawn from modern logic – in addition to material familiar from Aristotle's text.[4] This axiomatization is certainly formalistic, and certainly makes it possible for a machine to carry out deductions in the formalized system. It does all this by imposing an order on Aristotle's syllogistic, rather than discovering the order within it.

Łukasiewicz's 'standpoint of modern logic' leads him to incorporate in his system some derived rules that go directly counter to the character of the Aristotelian syllogism. I have in mind the rule of Expansion (which licenses the addition of irrelevancies to the premise-sequence of any valid syllogism) and Contraction (which licenses the deletion of repeated premises).[5] The addition of either of these rules to Aristotle's syllogistic would introduce two-premised theses that conflict with the Aristotelian requirement that all valid inferences be in one of the three Figures.[6] For example, the law of e-conversion ('If no *b* is *a* then no *a* is *b*') can in Łukasiewicz's system be expanded by incorporating the irrelevant premise 'Every *d* is *c*', thus producing the inference 'If no *b* is *a* and every *d* is *c* then no *a* is *b*', which is not in any of the three Figures. Again, given that the premises 'Every *b* is *a*' and 'Every *c* is *b*' imply 'Every *c* is *a*', and given that this conclusion together with the second premise implies 'Some *b* is *a*', it follows by Contraction that the initial two premises imply 'Some *b* is *a*'; and yet the inference 'If every *b* is *a* and every *c* is *b* then some *b* is *a*' is not in any Figure. Formalization, then, can result in misrepresentation.

---

[4] Łukasiewicz 1957, 88–89.
[5] Thom 1981, 40–47.
[6] Thom 1981, 134.

However, it need not do so. Timothy Smiley's axiomatization of Aristotle's syllogistic based on four rules of inference and a definition of deduction[7] operates within the general framework of modern logic but adapts that framework to the interpretative task at hand. As a consequence, it does not have the unwelcome side-effects that flow from Łukasiewicz's deployment of parts of modern logic that are ill-suited to that task. Smiley's system, while expressed with the precision of modern logic, retains the order already present in Aristotle's syllogistic.[8]

In general, one can say that axiomatization always aims to display order in a body of propositions. In modern times it has been construed as having the additional aim of making machine inference possible. When employed as part of an interpretative exercise, the question arises whether its aims *qua* axiomatization are aligned with its aims *qua* interpretation. We have seen that, while some historians of logic have failed to bring these two sets of aims into alignment, others have succeeded.

Symbolization

Symbolization includes the use of schematic letters as well as the use of special signs to stand for technical concepts. In so far as it reveals structure, it is the structure of individual propositions and arguments that symbolization reveals, not the structure of a system of propositions. Dutilh Novaes argues that symbolization may enhance formality if it is suitably iconic and permits efficient calculation.[9]

The use of symbolization in interpreting the logics of the past – just like the use of axiomatization – gives rise to the question of reconciling the aims of formalization with those of interpretation.

Consider Philotheus Boehner's use of the formula $\overline{p} \supset (p \supset q)$ as a symbolization of Ockham's statement that the true can follow from the false.[10] The symbolism is well adapted to displaying the internal structure of compound propositions. However, it misrepresents Ockham's statement, since the latter is not a compound statement but

[7] Smiley 1973.
[8] Thom 1981, 105–107.
[9] Dutilh Novaes 2007, 274–278.
[10] Boehner 1952, 61.

a statement about what can *follow* (and about what *can* follow). But if Boehner's formalization is inept, the fault lies with the interpreter not with the symbolization as such. Modern logic could have been applied without misinterpreting Ockham. Examples can be found in the symbolization Dutilh Novaes applies to the medieval theory of supposition.

Conceptual Translation

Dutilh Novaes regards the third notion of formalization – the conceptual translation of pre-formal material into the framework of a formal logical theory – as the most important. She suggests that conceptual translation in this sense is already implicit in symbolization. And on that point she is in agreement with Alonzo Church, who wrote:

> To adopt a particular formalized language thus involves adopting a particular theory or system of logical analysis. (This must be regarded as the essential feature of a formalized language, not the more conspicuous but theoretically less important feature that it is found convenient to replace the spelled words of most written languages by single letters and various special symbols.)[11]

Where Dutilh Novaes speaks of conceptual translation, Church speaks of logical analysis. A rule of substitution may be silently imported along with the symbolism, as it is in Smiley's formalization of the syllogistic. For Smiley, the primitive deduction of '*c* belongs to all *a*' from '*c* belongs to all *b*' and '*b* belongs to all *a*' implicitly includes all substitutions in it, such as the deduction of '*c* belongs to all *b*' from '*c* belongs to all *b*' and '*b* belongs to all *b*'.[12]

On *this* question, E.J. Ashworth makes a firm statement concerning the medievals:

> There was never any suggestion that the study of logic is the study of formal systems, and even though later logicians used a semitechnical language in order to bring out distinctions, it was in order to bring out distinctions of meaning.[13]

---

[11] Church 1956, 3.
[12] Thom 1981, 105.
[13] Ashworth 2003, 78.

Certainly, if by a formal system one understands Church's full paraphernalia of primitive symbols, formation rules, transformation rules, and systematic development, then what Ashworth says is true. And yet, it is not uncommon for writers to mean somewhat less than this by the expression. Consider Tony Street's use of the word 'system' to cover

> …the truth-conditions for the propositions, squares of opposition, and…transformation rules.…[14]

Is it not true that each of these components is to be found in Avicenna – and in many other medieval treatments of various branches of logic – at least severally, if not grouped together under a single concept? In general, if a system is thought of as a body of rules, a text might be seen as acting in accordance with such a system, or with an individual rule in it, without thereby being seen as having espoused that rule or that system. And this distinction can be applied to a body of rules either severally or collectively. The candid interpreter will be able to declare in which of these senses he is attributing rules or systems to his text. (I have to confess that in some of my interpretative efforts I have fallen short of this ideal.)

There is a sense in which it would be right to take issue with Ashworth's firm statement. To enlist concepts drawn from mathematical logic in the interpretation of medieval logic is not to suggest that the medievals thought that the study of logic is the study of formal systems. It is not even to suggest that the interpreter thinks this, though it is to suggest that the interpreter finds such a procedure illuminating, at least with reference to individual points in medieval logic. The same is also true of whole tracts of medieval logic, such as (say) a logician's treatment of modal syllogisms, where a contemporary interpreter may find that light can be cast on a text by representing the material as a system in Street's sense. Such a representation might be a successful one if its purpose were to facilitate comparisons between different medieval treatments of the same subject matter.

Bocheński announced in the opening pages of his history of logic, that he would not use formalization because, being so precise in meaning, it might introduce an appreciable risk of misunderstanding.[15]

---

[14] Street 2002, 132.
[15] Bocheński 1961, 22.

And Ernest Moody expressed similar reservations while opting to use formalization even if the results could only be 'tentative' and 'partly conjectural'.[16] These two authors at least seem to realize that beauty is not necessarily enhanced by being dressed up in the latest fashions.

In defence of formalization, two broad lines of argument suggest themselves, focused respectively on the ideas of form and interpretation. In relation to form, it might be said that to formalize something is simply to display its logical form – and logical forms are always the same no matter what period the material exemplifying them comes from. In relation to interpretation, it might be said that the formalizer, like anyone who tries to make sense of an old text, is just acting like an interpreter – and like all interpreters is forced to go beyond the text since mere repetition is not interpretation. And at least, it might be said, this sort of interpretation (unlike some others) has the merit of exactitude. These defences urge respectively that the practice of formalization is perfectly innocent, or else that it is like an original sin of which everyone is equally culpable. I will comment on both lines of defence, and I will argue that to use modern types of symbolization in interpreting the logics of the past is not of itself pernicious, and that such devices may contribute to an interpretation's success.

We can see from these examples that faithful interpreters need to be sensitive to the importation of theory into their representations of logical texts – especially theory whose content is in some way alien to those texts. Interpretation may not be the same as description; but faithful description is a precondition of successful interpretation, and the acknowledgement of differences such as these may be relevant to a faithful description. But fidelity alone doesn't make an interpretation successful. In addition to the requirement of fidelity it is incumbent on a successful interpretation that it should be illuminating. Such illumination may be supplied by the interpretation's theoretical content.

Illumination is not something mystical. We are all familiar with the experience of *seeing* that an interpretation is successful in 'casting light' on what was previously obscure, of 'making sense' of what previously did not make sense, of 'fitting together' elements that previously seemed unconnected. This is all I mean by illumination. Obviously, in order to achieve such illumination an interpretation will have to *do*

[16] Moody 1953, Preface.

something with or to its object. It will have to present the object under a certain aspect, or recontextualize or transform the object somehow. What the interpretation does in order to illuminate it I will call its *treatment* of the object.

Besides being illuminating, there are three things that one would expect of a successful interpretation. First of all, in relation to the interpretation's object (i.e., that which the interpretation is an interpretation *of*), one would expect that it possesses an appropriate integrity. Not everything is a fit object for interpretation. Or rather, not everything is a fit object for interpretation of a given sort. If we are looking for an interpretation of natural phenomena that articulates natural explanatory laws, then we need to 'carve nature at the joints'. A rag-bag of natural phenomena that do not fall under the same natural laws would lack the integrity that is appropriate to an object for interpretation of this sort. The requirement of appropriate integrity is, arguably, violated by certain interpretations that use the symbol-systems of modern logic to interpret selected passages from old logic texts. A selection of passages doesn't have either the intentional or the systematic integrity that one expects of a whole text. And if – as sometimes happens – the selection is made principally on the basis that it provides historic material which can be represented in modern symbol-systems, then such an object is bound to lack the kind of integrity that is appropriate for a certain sort of historical interpretation. At the same time, it needs to be acknowledged that the interpreters in question may not be seeking that sort of historical interpretation. They may be seeking to interpret fragments drawn from old texts as precedents for certain modern views, and if that is the case then the objects of their interpretation, even if they lack textual integrity, may very well possess the kind of integrity that is appropriate for the interpretation in hand. I will return to the subject of historical and other types of interpretation.

Secondly, an interpretation should provide a comprehensive treatment of its object, not a partial one that leaves certain parts or aspects of the object uninterpreted; otherwise it will not genuinely present a treatment *of* that object. Thirdly, the treatment should be coherent, exhibiting conceptual unity rather than dissolving into a number of disparate treatments of different parts of the object; otherwise it will not present *a* treatment.

Given that the use of a notation may carry a certain amount of theory with it, it's also true that modern logic is highly flexible, allowing for

a wide variety of theoretical assumptions. As an example, consider the Rules of Appropriation introduced by Robert Kilwardby in his analysis of Aristotle's mixed necessity/assertoric syllogisms. The background to these rules is as follows. Aristotle regards the first Figure LX moods (i.e. those having a necessity-Major and an assertoric Minor) as syllogistically productive, but regards the first Figure XL moods (i.e. those having an assertoric Major and a necessity-Minor) as syllogistically unproductive. If assertoric propositions are read as temporally unrestricted then it turns out that Aristotle is right about the first Figure LX moods. But if assertoric propositions were uniformly required to be as-of-now or were allowed to have either an as-of-now or an unrestricted sense then *all* necessity/assertoric syllogisms would turn out to be *invalid*, and if assertoric propositions were uniformly required to be unrestricted then *all* such syllogisms would turn out to be *valid*. In either case, Aristotle's results would turn out to be wrong. Enter Kilwardby with his Rules of Appropriation. According to these rules assertoric premises have to be understood as unrestricted in all inferences that are reducible to first Figure LX syllogisms, but they may be understood either as unrestricted or as merely as-of-now in inferences that are reducible to first Figure XL syllogisms. The purpose of the rules is to exclude from consideration inferences reducible to first Figure LX syllogisms, where the assertoric premise is merely as-of-now, but to allow consideration to be given to inferences reducible to first Figure XL syllogisms where the assertoric is as-of-now. It is thus an *ad hoc* interpretive move, designed to save Aristotle's results by reading assertoric propositions differently in different inferential contexts.[17]

At first sight it appears that Kilwardby's procedure in introducing these rules does not admit of treatment within any modern notion of a formal system, because it makes the meaning of assertoric propositions context-dependent, contrary to the requirement on modern formal systems that all signs in them have unambiguous context-independent meanings. However, it turns out that if we are suitably inventive we can construct a formal system that reflects Kilwardby's *ad hoc* restrictions on assertoric propositions. Normally, in a formalized language if each of a number of formulas is well-formed then any sequence of those formulas is an allowable sequence of formulas in the language. There is, however, no necessity that this should be

[17] Thom 2007, 148–149, 157–162.

true of all formalized languages. We could construct a language, for instance, in which while *p* and *q* are both well-formed propositional forms, the sequence <*p*, *q*> is admissible as a premise-sequence in a deduction but the sequence <*q*, *p*> is not. This is precisely what we need to do in order to represent Kilwardby's Rules of Appropriation in a formalized language. The language is defined to include strings like ab^a ('*a* belongs to all *b*') and Lab^a ('*a* necessarily belongs to all *b*') as well-formed propositional forms, and to include sequences of such forms like $\langle Lab^a, bc^a \rangle$ as admissible premise-sequences, but not to include sequences of such forms like $\langle ab^a, Lbc^a \rangle$ as admissible premise-sequences. There is simply no such premise-pair as $\langle ab^a, Lbc^a \rangle$ expressible in the language. By this means we can construct a formalized language in which assertoric propositions are given a uniform semantics – as unrestricted assertorics – without either having to recognize the existence of unwelcome as-of-now counter-examples to the moods that Aristotle regards as valid, or having to allow as valid moods which Aristotle rejects as invalid.[18]

This is not to say that Kilwardby had this sort of manoeuvre in mind. It's just that *functionally* the manoeuvre performs the same work as Kilwardby's Rules of Appropriation, in occluding from critical view a certain range of linguistic possibilities.

Interpretation

The reason I mention this is not to raise any questions about Kilwardby's integrity as an interpreter or a logical theorist; it is to make the point that the successful interpreter – and here I am thinking of the modern interpreter of a medieval logic text – may on occasion need to be creative. By creativity I just mean making up new ways of doing things; and specifically in this instance I mean devising a variant on the standard formation rules in modern logical systems. What the example shows is that theories applied to old logic texts may need to be ones that are custom-made for the purpose.

The need for creativity is not limited by considerations of what the original author may have approved (even if that question can be settled). Within a setting where an interpretation is being attempted, the

[18] Thom 2007, 243.

limitations are just those that apply to all successful interpretation. The object needs to have an appropriate integrity, and the treatment needs to be comprehensive, coherent and illuminating.[19]

I have suggested both that interpretation aims at fidelity, and also that it may need to be creative. Isn't there a conflict here? We could distinguish two types of creativity, one of which (good creativity) is a means towards fidelity – a new way of communicating an old message – while the other (bad creativity) is not, but is happy to forget fidelity and to alter the message for the sake of novelty. The distinction between the two sorts of creativity assumes that all interpretation should aim at fidelity. It also assumes that there is a difference of kind between interpretations that supply extra material which illuminates a text, and those that introduce extra material which distorts the text or makes it say the opposite of what it said before interpretation. Potentially, we could then say, there is indeed a tension between the pursuit of fidelity and the pursuit of creativity, and that good creativity may always slide over into bad.

The distinction between good and bad creativity also provides us with an answer to the suggestion that all interpretation is like an original sin – a practice which we cannot but engage in, and thus for which we cannot be blamed. Interpreters can always choose whether the material which they import into the text will be such as to preserve fidelity or whether it will introduce distortions; and to that extent they can always be held responsible for their interpretations.

I think that Kilwardby's Rules of Appropriation, in the context of his interpretation of Aristotle, are themselves a case of creativity in the service of fidelity. The rules are his invention – not Aristotle's – and yet their use provides the reader (seemingly, at least) with a way of understanding something puzzling in Aristotle's text without distorting anything in the text. One can see from this example that an interpretation using concepts that are not to be found in the interpreted text may, for all that, exhibit good creativity.

I believe, too, that my interpretation of Kilwardby's Rules of Appropriation in terms of a different kind of formation rule in a formalized language was good in this sense. If I am right, then – since that interpretation does involve at least the partial absorption of old material

[19] For a fuller description of this approach to interpretation see Thom 2000.

into new systematic contexts – it follows that formalizing interpretations may exhibit good creativity.

The distinction between good and bad creativity in interpretation is, I think, reasonably clear. But that doesn't mean that a given interpretation has to manifest just one sort of creativity. I have already indicated that Łukasiewicz's formalization of Aristotelian syllogistic cannot straightforwardly be accepted as a successful interpretation, and that some of its creative elements have the effect of distorting Aristotle's text. In this sense the interpretation contains elements of bad creativity; but along with those it shows elements of good creativity.

It may not be a straightforward matter to determine, with reference to a given creative interpretation, whether its creativity is good or bad. To illustrate this, I will make reference to another of my interpretations of the ideas of Robert Kilwardby. Kilwardby observes that a syllogism may have fewer than three distinct terms, citing the instance of a syllogism from opposed premises, such as the following:

Every discipline is to be studied No discipline is to be studied
Something that is to be studied is not to be studied

This instance appears to conflict with the nature of a syllogism, which requires three terms; but Kilwardby states that there *are* three terms here *secundum rationem* even if there are only two *secundum rem*. In a recent publication, I interpret this statement in terms of the modern notion of a substitution-instance: the argument has only two distinct terms but it is a substitution in a valid formula having three distinct terms.[20] But an objection might be raised against my interpretation. It might be said that even if the modern relationship of substitution coincides in this case with Kilwardby's *secundum rem*/*secundum rationem* distinction, so that the two have a kind of extensional equivalence, they are not intensionally equivalent, and to that extent it's not legitimate to pose one as an interpretation of the other. The distinction between a *res* and its *ratio* is such that the *res* may fall short of its *ratio* without wholly abrogating that *ratio*. This distinction is not at all the same as the substitution-relationship. A *res* partially instantiates its *ratio* because it lacks some of the *ratio*'s features, whereas a substitution-instance fully instantiates the features of the formula in which it is a substitution, and adds to them. Because of these differences, it

[20] Thom 2007, 60–61.

seems that my use of a bit of modern syntactic theory to illuminate Kilwardby's account of syllogisms from opposed premises is a failure.

In reply I would say that there is a deeper connection between Kilwardby's distinction and the modern notion of substitution-instance than the objection acknowledges. True, there are differences between substitution-instances and things that fall short of their *ratio*. But what the objection fails to acknowledge is that *the reason* why a two-termed syllogism from opposites falls short of the three-termed *ratio* of the syllogism – rather than not being a syllogism at all – is precisely that it is a substitution-instance in that *ratio*, i.e. because the nature of the syllogism does indeed require three distinct terms at the most general level, even if there are fewer in some individual cases. So I would say that my appeal to the substitution-relation is indeed illuminating.

Clearly, this interpretation is a creative one; but is its creativity of the good or of the bad variety? In order to answer this question, we have to be clear about *what* exactly the interpretation illuminates. That which is illuminated – the object of interpretation – should be stated as Kilwardby's account of syllogisms from opposed premises, not as Kilwardby's *res*/*ratio* distinction in general. If we were to take the latter as the object of interpretation, we would have an instance of bad creativity. This becomes apparent if we look at other cases of the *secundum rem*/*secundum rationem* distinction in Kilwardby. Elsewhere Kilwardby uses the distinction to characterize the relationship between an argument in which only one premise is expressly stated and a fully-expressed two-premised argument: linguistically (*secundum rem*) there is only one premise, but according to the *ratio* of an argument there are two. He also uses it to characterize the relationship between universal affirmative predications in general, and those universal affirmative predications which subsume an ontological inferior under its ontological superior: *secundum rem* anything can be predicated of anything, but in many cases the predication would fall short of its *ratio*, which is to predicate genera of their species. (Let's leave aside the question whether Kilwardby is right about this *ratio*.) Now, a one-premised argument is not a substitution in a two-premised one, nor is an ordinary predication a substitution in a genus-species predication. However, if my interpretation were taken to have a wide object – namely, the *res*/*ratio* distinction in general – then we would expect all cases of that distinction to fall under the rubric of substitution. Since it is obvious that not all cases of the *res*/*ratio* distinction do fall under the rubric of substitution, it's clear that if my interpretation were taken

in that way then it would involve bad creativity. Taken in the intended way, with the narrower object of interpretation, it involves only good creativity.

Historical Interpretation

An interpretation may be defensible in such terms as these, but one major question remains untouched. Is it an *historical* interpretation? After all, if what we are doing has a claim to be history of logic then our interpretations will need to possess whatever characteristics distinguish historical interpretations among interpretations in general. In a minimal sense, an historical interpretation's object would need to come from the past; and the interpretations we have discussed all satisfy this minimal condition. But there is a deeper sense in which an interpretation may be historical. If interpretation always aims at giving a treatment of its object, then types of interpretation may be differentiated according to the types of treatment they give to their objects. Historical interpretations stand apart in that they offer a treatment that brings the object into a relationship with some other temporally located thing or event. The other term of that relationship might be the object's social, cultural or intellectual context. It might be another text from the past. Or it might be modern treatments of similar problems in logic. The relationship might be a cluster of similarities and differences. It might be a web of influences and resistance to influence – of tradition and originality, or of what Alain de Libera calls the traceability of aporias, arguments, distinctions and concepts.[21] It might or might not be a relationship that is articulated through a narrative. Historical treatments in any of these manners may or may not involve the absorption of old material into new systematic contexts. If symbolization is involved, it may or may not have been newly devised to serve an interpretive end. Its purpose may be to display the object's content; or it may be to act as a counterpoise to the object's sense. There are many types of historical and non-historical interpretation.

To relativize interpretation in this manner, of course, is not to answer questions of value: are all these ways of interpreting a historical text equally valuable? Some useful thoughts on this topic are to be found

[21] Libera 2005, 176 n. 2.

in John Marenbon's essay 'What is medieval philosophy?'.[22] Marenbon formulates several different ways of thinking about the nature of medieval philosophy. Of these he rejects most, but finds some value in what he calls the anti-anachronistic answer (which highlights the importance of historical contexts such as the institutions within which the text was used, and the author's other writings), and in the analytical answer (which highlights the importance of contexts generated by subject-matter independently of questions of historical influence, and thus finds much continuity of subject-matter and treatment between medieval philosophy and contemporary analytical philosophy). Marenbon himself favours a combination of the analytical and anti-anachronistic approaches.[23] Such a combination brings with it a powerful blend of the types of understanding that have matured into the distinct disciplines of history and philosophy. At the same time, its recognition of the intellectual continuities between past and present enables the historian of philosophy to engage actively in today's philosophical debates.

Marenbon sees this blended approach to the practice of history of philosophy as opening the possibility of an historically sensitive way of doing philosophy. Commenting on the suggestion that modern philosophers may initially find the history of medieval philosophy to be a useless study because it 'has little direct bearing on their work as philosophers and seems to be only of detached historical interest', he writes:

> The way out of this impasse may, strangely, be to offer even more history. As well as pursuing their philosophizing, modern philosophers need to think about what sort of activity it is in which they are engaged. It is important for such thought for them to learn in detail how similar techniques to their own were used on closely-related questions, but within an intellectual context and for purposes quite different from their own.[24]

I think that by now there are plenty of philosophers who have learnt this lesson. More importantly for our present purpose, we can apply Marenbon's remarks to the historical interpretation of logic texts. Of the many ways in which the history of logic may be pursued, one

[22] Marenbon 2000.
[23] Marenbon 2000, 15–19.
[24] Marenbon 2000, 18.

particularly valuable way combines the historian's interest in narrating social and literary development, with the philosopher's interest in intellectual contextualization and continuity. This blend of approaches brings to the history of logic the same depth that it brings to the history of philosophy. And the historian of logic, just as much as the historian of philosophy, is well placed, by adopting this blended approach, to participate in contemporary debates in the theory of logic. Those debates are largely conducted through the medium of symbolization in a systematic context; and the ability to use symbolization correctly and to work within a system judiciously will be an important part of the armoury of the historian-logician. The world already contains a small population of such historian-logicians, and we are already seeing signs that the discipline of logic can be practised in an historically self-conscious way, as envisioned by Marenbon for the discipline of philosophy.

DE INTERPRETATIONE 5–8: ARISTOTLE, BOETHIUS, AND ABAELARD ON PROPOSITIONALITY, NEGATION, AND THE FOUNDATIONS OF LOGIC

Christopher J. Martin

The history of logic is the history of a technical discipline and no matter what form that history takes whether it be whiggish, Kuhnian, feminist, post-foucaldian, or whatever, it will be inadequate to its subject if it does not properly understand the character of the discipline as it presently exists. Neither the claim that some concept important in contemporary formal or philosophical logic has a history which connects it continuously with a concept employed in the past nor the claim that there is a radical incommensurability between them can be assessed if one does not fully understanding the contemporary accounts of these concepts. 'Accounts' rather than 'account' since in general there need be no agreement among contemporary philosophers over the concepts in question. One of the major reasons, indeed, for studying the history of philosophy philosophically[1] is to recruit past philosophers into the debate over some topic which interests us – in the case at issue here the nature of propositionality and propositional logic. This is not to claim that our present understanding of these concepts is uniformly superior to some past version of them though in the case of formal and philosophical logic this is certainly for the most part true. The aim of the following paper is to show, however, that some of the progress made in the nineteenth and twentieth century towards understanding the nature of propositionality and propositional inference which were crucial for the development of propositional logic as we know it had already been made in the twelfth century only to be forgotten when the interests of philosophers changed. Methodologically what is important is that we must evaluate the work of twelfth century logicians from the point of view of our twenty-first century understanding and from

[1] For a discussion of philosophical versus historical histories of philosophy see Normore 1990.

that point of view we can say that Peter Abaelard's contributions to the investigations of the foundations of propositional logic parallels that of Frege in the nineteenth century and that his understanding of propositions anticipates our own. We can also say, and in a way this is more important, that Boethius clearly did not understand the nature of propositionality and of propositional logic and that it is the worst kind of historical mistake to pretend that they did.[2]

Aristotle's project in *de Interpretatione* is to establish the character of one of the two relationships upon which his account of valid inference will be based. The relationship, that is, that holds between propositions which are such that it is not possible for them to be true together. Aristotle's appeal to *reductio proofs* in the *Prior Analytics* shows that he holds that if his various provisos about the structure of a syllogism are satisfied, a sufficient condition for such an argument to be valid is that the opposite of its conclusion cannot be true when both of its premisses are true. In his *reductio* proofs of various moods of the secondary figures he invokes the other fundamental relationship of his logic, that of evident syllogistic entailment, as exhibited by all the moods of the first figure, to show that the condition in question is met for particular combinations of premisses and conclusion.

De Interpretatione, then, is concerned to locate pairs of propositions which are opposed in that they cannot be true together. Aristotle explores this relationship in the first place in Chapters 5–8 of the work and it is those chapters that I wish to consider here. They have been relatively neglected by modern commentators but they seem to me to be the most important in the book. They show us that Aristotle apparently had no notion of propositionality in our modern sense and that Boethius on the evidence of his commentaries certainly did not. In the twelfth century, however, Peter Abaelard working on the material provided in these chapters and in Boethius' commentaries developed what we can recognise as the foundations of a genuinely propositional logic. This, I think, was the first and perhaps greatest achievement of mediaeval logic as it moved beyond the limits of its ancient inheritance.

I will begin by reviewing the important points made about propositional relations in *De Interpretatione* 5–8. Next I will say something about what is required for an account of propositional relations to

[2] For a further discussion of this point see Martin 1991.

be a propositional logic and Boethius' failure to provide this in his commentaries on these chapters. I conclude by looking at Abaelard's reconstruction of the theory of propositional relations presented there as part of a genuinely propositional logic.

Aristotle

At the end of chapter 4 of *de Interpretatione* Aristotle distinguishes assertive expressions as those 'in which true and false inhere' from various other kinds, of which he gives only entreaty (εὐχὴ, *deprecatio*) as an example, and which are set aside as of interest to rhetoric or poetry rather than to logic. I use 'assertive expression' here to translates Aristotle's λόγος ἀποφαντικός and Boethius' translation of it as '*oratio enuntiativa*' and so I am committed to translating ἀπόφανσις and '*enuntiatio*', as 'assertion'. This translation is, however, problematic and indeed, it reveals immediately what is at issue in these chapters for the foundations of logic. While the adjective 'assertive' may be used to indicate that an expression has the syntactic form appropriate for assertion without implying that it is in fact asserted, this is obviously not true of the noun.[3]

The other term of art employed by Aristotle, though not in these four chapters, is προτάσις which Boethius translates as '*propositio*'. While *we* might well insist on distinguishing a proposition from an assertion Boethius, and following him Abaelard, use '*propositio*' as a synonym for '*enuntiatio*'. As we will see, however, what is needed, for the formulation of a propositional logic and what is not available from Aristotle, is a term with which to designate the assertable but unasserted content of an assertion.[4]

In chapter 5, Aristotle introduces the notion of a single, or unitary, assertive expression[5] and distinguishes among such expressions

---

[3] This is clear in the difference between asking someone to consider the assertive expression 'Socrates is running' and asking them consider the assertion that Socrates is running.

[4] The Stoics too seem not to have possessed the notion of an assertible as a non-asserted propositional content which might equally well be be the content of an assertion, question, command or any other kind of speech act. Bobzien 1999, 93, n. 48.

[5] *De Int.*, 5, 17a15–17: ἔστι δὲ εἷς λόγος ἀποφαντικὸς ἢ ὁ ἓν δηλῶν ἢ ὁ συνδέσμῳ εἷς, πολλοὶ δὲ οἱ πολλὰ καὶ μὴ ἓν ἢ οἱ ἀσύνδετοι. Boethius, trans. *AL* II. 1–2, 8: 'Est autem una oratio enuntiatiua quae unum significat uel coniunctione una, plures autem quae plura et non unum uel inconiunctae.'

between those which are simple, which may be either affirmations or negations, and those which are unitary in virtue of a connective (συνδέσμῳ). Unitary simple assertive expressions according to Aristotle are such because, in Boethius' translation, they signify one thing (ὁ ἓν δηλῶν, *unum significat*). Affirmation, according to Aristotle, is prior to negation and is an assertion of 'something of something' where the negation is an assertion 'of something from something'.[6] Assertions unitary in virtue of a connective are thus assertions, and here is where the trouble begins, they are assertions which are themselves composed of simple assertions.

Given this definition Aristotle goes on in chapter 6 to argue, that for every affirmation there is an opposed negation and for every negation an opposed affirmation. There are, however, different forms of opposition and contradiction is introduced as the relation which holds between an affirmation and the corresponding negation where, as I mentioned, affirmation and negation are forms of simple assertion. The issue now for Aristotle is to settle what the negation is, and so the contradictory, for each of the different kinds of propositions that he is interested in. In chapter 7 he characterises a universal affirmation and the corresponding universal negation as contrary assertions (ἐναντίαι αἱ ἀποφάνσεις, *contrariae enuntiationes*). The contrary of 'every human is white' is thus 'no human is white'. Such propositions cannot both be true together but they may be false together. The contradictory of a universal affirmation, on the other hand, divides truth and falsity with it and for 'every man is white' Aristotle gives as the contradictory the proposition which translates literally as 'not every man is white' (οὐ πᾶς ἄνθρωπος λευκός ἐστίν, '*non omnis homo est albus*'). Contradictoriness, however, does not for Aristotle entail the division of truth and falsity; for according to his definition the indefinite affirmation 'a human being is white' has for its negation and contradictory 'a human being is not white', both of which may be true at the same time.

Finally in chapter 8 Aristotle briefly touches again on the question of what is required for an affirmation or negation to be unitary. He maintains that if the term 'tunic' is introduced to stand for both a

[6] *De Int.*, 6, 17a, 25 κατάφασις δέ ἐστιν ἀπόφανσις τινὸς κατὰ τινός, ἀπόφασις δέ ἐστιν ἀπόφανσις τινὸς ἀπὸ τινός. *AL* II. 1–2, 9: 'Affirmatio uero est enuntiatio alicuius de aliquo, negatio uero enuntiatio alicuius ab aliquo.'

human and a horse, then 'a tunic is white' is not unitary because to assert this is no different from asserting 'a human is white and a horse is white' (ἔστιν ἵππος λευκὸς καὶ ἔστιν ἄνθρωπος λευκός), in Boethius' Latin '*est equus albus et est homo albus.*'[7] There were, remember, originally no quotation marks in the Greek or Latin texts and so no way of telling whether he is referring to two distinct proposition or to a single compound proposition.

Boethius

Boethius' commentaries on *de Interpretatione* provided the Middle Ages with their introduction to the theory of meaning. Boethian semantics is developed on the basis of the distinction made by Aristotle in *De Interpretatione* 1, between the signification of terms and that of affirmations and negations – defined, remember, as the species of simple assertions. On this account of them affirmations signify mental states in which the mental items signified by their component significant terms are combined and negations signify mental states in which they are separated. Missing in the theory is an account of compound propositions showing how their meanings are obtained from the meanings of their components. Such an account requires a notion of unasserted propositional content. With it we may also locate what is common to different speech acts and explain how it is that they differ. The relevant differences are the differences in what we now call their force.

The distinction between force and content required for a genuinely propositional logic in contrast to a case by case account of each particular form of proposition has been called by Peter Geach the *Frege Point*.[8] It was not, however, very clearly enunciated by Frege himself and he was anticipated in it by the logicians of the twelfth century.

---

[7] *De Int.*, 8, 18a 18–23 εἰ δὲ δυεῖν ἓν ὄνομα κεῖται, ἐξ ὧν μή ἐστιν ἕν, οὐ μία κατάφασις· οἷον εἴ τις θεῖτο ὄνομα ἱμάτιον ἵππῳ καὶ ἀνθρώπῳ, τὸ ἔστιν ἱμάτιον λευκόν, αὕτη οὐ μία κατάφασις [οὐδὲ ἀπόφασις μία]· οὐδὲν γὰρ διαφέρει τοῦτο εἰπεῖν ἢ ἔστιν ἵππος καὶ ἄνθρωπος λευκός, τοῦτο δ' οὐδὲν διαφέρει τοῦ εἰπεῖν ἔστιν ἵππος λευκὸς καὶ ἔστιν ἄνθρωπος λευκός. Boethius trans., *AL* II. 1–2, 13: 'Sin vero duobus unum nomen est positum ex quibus non est unum, non est una adfirmatione; ut, si quis ponat nomen tunica homini et equo, est tunica alba haec non est una adfirmatio nec negatio una; nihil enim hoc differt dicere quam est equus et homo albus, hoc autem nihil differt quam dicere est equus albus et est homo albus.'

[8] Cf. Geach 1965.

Frege in fact speaks of a common content (*Inhalt*) presented with a different force (*Kraft*) only once, and then only to account for the similarities and differences between assertions and questions.[9] His point is hardest to avoid here and Boethius too seems to be aware of it.[10] Commenting on Aristotle's observation in *De Interpretatione* 5, that one cannot assert anything or ask a question with a noun or verb alone, he says that:[11]

> The sense is something like this: an assertive proposition is formed most particularly by these two: through its proper nature and substance and through its use and treatment. Its nature is that truth or falsity is found in it. It is used, on the other hand, when something is either proposed in asking a question and there is a reply, as (in asking, for example) whether the soul is immortal; or alternatively, when someone asserts or propounds his belief, as when someone says from his own will: the soul is immortal.

This, incidentally, is the only place where Boethius speaks of an assertive proposition (*propositio enuntiativa*).

In commenting on *De Interpretatione* 4, Boethius lists the five kinds of perfect expression which according to him were recognised by the

---

[9] See Frege's essays 'Das Gedanke' (1918–19) and 'Die Verneinung' (1918–19), reprinted in Frege 1966; cf. Dummett 1977, 307–8.

[10] (Boethius two commentaries (*prima/secunda editio*) on the *De Interpretatione* will be cited as *BoethDI(1)* and Boethius*DI(2)*, the chapter number will follow and then, in bracket, the page in Boethius 1877 (I) for the first *editio* or in Boethius 1880 (II) for the secund *editio*.) *BoethDI(2)*5 (II, 113): 'Unde definitio quoque enuntiationis una quidem naturae atque substantiae talis redditur: enuntiatio est oratio, in qua uerum falsumue est. Ex usu uero eius atque actu enuntiatiua oratio est, quam interrogantes proponimus, ut uerum uel falsum aliquid audiamus, ex nostra uero prolatione, quam proponentes uerum aliquid falsumue monstramus.'; Boethius, *In Topica Ciceronis* I, *PL* 64, 1048D: 'Quaestio uero est dubitabilis propositio. Propositio uero est ratio uerum falsumue designans. Omnis igitur propositio siue constanter atque pronuntiatiue proferatur, ut si quis dicat: Omnis homo animal est; siue ad interrogationem dirigatur, ut si quis interroget: Putasne omnis homo animal est? retinet proprium nomen, et propositio nuncupatur.'; Cf also Boethius *De Differentiis Topicis*, *PL* 64, 1177C (for a more recent edition, see Nikitas 1990, 9).

[11] *BoethDI(2)* 5 (II, 112–113): 'QUONIAM NON EST DICERE SIC ALIQUID SIGNIFICANTEM VOCE ENUNTIARE, VEL ALIQUO INTERROGANTE VEL NON SED IPSUM PROFERENTEM. Sensus huiusmodi est: enuntiatiua propositio his maxime duobus formatur: per propriam naturam atque substantiam et per eius usum atque tractatum. Et natura quidem ipsius est, ut in ea ueritas inueniatur aut falsitas, usus autem cum aliquid aut interrogando proponitur et respondetur, ut utrum anima immortalis est, aut certe cum aliquis per suam sententiam enuntiat atque profert, ut si qui dicat hoc ipsum ex propria uoluntate: anima immortalis est.'

Peripatetics:[12] the assertive, deprecative, imperative, interrogative, and vocative, but by giving completely unrelated examples shows at best an interest in cataloguing the different types of speech act. These various sentential expressions are each said to be perfect in that they complete and express a sense (*sententia*).[13] 'Sense' here, however, does not mean propositional content since the completeness of each kind of speech act lies simply in the fact that on hearing such an expression a listener does not wait in suspense for more.[14] He knows that he has been asked a complete question, given a complete command, and so on. Boethius says nothing more about non-assertive sentences and follows Aristotle in dismissing them as not of interest to philosophy. The philosopher or dialectician, he claims, is concerned with truth and falsity and so only with expressions in which these may be 'found' (*inveniri*). That is to say only with propositions.[15]

For more on non-assertive sentences twelfth-century logicians could refer to Priscian's *Institutiones Grammaticae*. Here they found expressions (*orationes*) characterised as congruous orderings of words signifying a complete sense (*sententia*), and in addition some remarks on the differences in meaning between the various moods of the verb.[16] According to Priscian sentences other than those in the indicative signify various mental attitudes towards the action or a passion signified

---

[12] *BoethDI(2)* 5 (II, 95): 'Perfectae autem orationis alia est deprecatiua, ut: Adsit laetitiae Bacchus dator alia imperatiua, ut: Accipe daque fidem alia interrogatiua, ut: Quo te, Moeri, pedes? An quo uia ducit? Alia uocatiua, ut: O qui res hominumque deumque Aeternis regis imperiis alia enuntiatiua, ut: Dies est et: Dies non est.'

[13] *BoethDI(2)* 5 (II, 95): 'Perfectas autem uoco eas quae complent expediuntque sententiam.'

[14] *BoethDI(2) Intro.* (II, 9). The same points are made by Saint Augustine in his *De Dialectica*, a work which was available in the second half of the twelfth century. Unlike Boethius, Augustine gives an example in which there is a common content. Cf. Augustine *De dialectica* 2 (Augustine 1975, 84): 'Separatis igitur his coniunctis verbis quae non implent sententiam restant ea verba coniuncta quae sententiam comprehendunt. Horum item duae species sunt: Aut enim sic sententia comprehenditur, ut vero aut falso teneatur obnoxia, ut est "omnis homo ambulat" aut "omnis homo non ambulat" et si quid huiusmodi est. Aut ita impletur sententia, ut licet perficiat propositum animi affirmari tamen negarive non possit, ut cum imperamus, cum optamus, cum execramur et similia. Nam quisquis dicit "perge ad villam" vel "utinam pergat ad villam" vel "dii illum perduint", non potest argui quod mentiatur aut credi quod verum dicat. Nihil enim affirmavit aut negavit.'

[15] Despite this he does discuss questions in his two works on dialectics *De Differentiis Topicis* and *In Topica Ciceronis*.

[16] Priscian, *Institutiones Grammaticae,* II, §15, (Priscian 1855, 53) : 'Oratio est ordinatio dictionum congrua, sententiam perfectam demonstrans.'

by the verb with respect to the subject. The indicative on the other hand signifies:[17]

> …the substance or being of a state-of-affairs (*substantiam sive essentiam rei*) which is not so in other modes.

In translating '*res*' as 'state-of-affairs' here I do not intend to suggest that Priscian, and certainly not that Boethius, has a developed theory of states-of-affairs as the *significata* of propositions. '*Res*' is used by Boethius to translate the Greek πρᾶγμα and has the same range of meanings. It is one of the great achievement of twelfth century philosophers to begin to properly distinguish between these meanings and between things and the states-of-affairs of which they may be the constituents and to develop theories of propositional meaning. It is clear, however, that expressions '*substantia rei*' and '*essentia rei*' are employed by Priscian to indicate, as we would say, that some a state-of-affairs holds. They recall the definition of an affirmation in *De Interpretatione* 6, as signifying something of something and in Boethius' shorter commentary on *de Interpretatione* 9, we find the second of them employed in an observation about the relationship of language to the world:[18]

> (Aristotle) says that it is a consequence of states-of-affairs (*consequentia rerum*) that the truth of a proposition follows from the holding of a state-of-affairs (*res subsistens*) (and that) the holding of a state-of-affairs (*essentia rei*) accompanies the truth of the proposition which speaks of it. For if this stone or some other is white, it is true to say of it that it is white, and this converts. For if it is true to say of it that it is white, it is

[17] Priscian, *Institutiones Grammaticae* VIII, §63 (Priscian 1855, 422): '(indicativus) substantiam sive essentiam rei significat, quod in aliis modis non est. Neque enim qui imperat neque qui optat neque qui dubitat in subiunctivo substantiam actus vel passionis significat, sed tantumodo varias animi voluntates de re carente substantia.' Priscian also characterises each mode e.g. Priscian, *Institutiones Grammaticae* XVIII, §76 (Priscian 1859, 239): 'Optativa verba indicant per se cum re et votum, adverbium vero 'utinam' tantum votum significat.' And on the indicative, Priscian, *Institutiones Grammaticae* XVIII, §68 (Priscian 1859, 235): 'Indicativus, quia essentiam plerumque ipsius rei significat, hoc modo nomine nuncupatur…opportune aptatur adverbiis vel coniunctionibus affirmativis vel causalibus quae vel substantiam vel essentiam rei comprobant, vel abnegativas qui eum abnuunt.'

[18] *BoethDI(1)* 9 (109–110): 'Ait (Aristoteles) hanc esse rerum consequentiam, ut rem subsistentem propositionis veritas consequatur, veritatem propositionis rei, de qua loquitur propositio, essentia comitetur. Nam si hic lapis vel quodlibet aliud album est, verum est de eo dicere quod album est, et hoc convertur. Nam si verum est dicere de eo quoniam album est et album esse necesse est. Itaque fit ut res veritatem et veritas res, de qua proponitur subsequatur.'

> necessary that it is white. So the (holding of) the state-of-affairs follows the truth and the truth the (holding of) the state-of-affairs about which it is proposed.

In his longer commentary on *De Interpretatione* 5, Boethius contrasts the signification of a simple categorical proposition with that of the *consequentia rerum* signified by a hypothetical proposition but unfortunately where we would expect to find a reference to an *essentia rei* the text is perhaps corrupt.[19]

Boethius says little explicitly about negation but what he does say makes it perfectly clear that he does not think of it as modern logicians do as an operation on propositional content[20] and that he has no uniform procedure for generating the negation of any given proposition. Following *De Interpretatione* 1, he maintains that the understanding signified by a negation is the mental separation of the understandings signified by its subject and predicate terms. Discussing Aristotle's definition of a simple assertion in *De Interpretatione* 5,[21] as 'a vocal expression significative of something that it is something, or is not', he appeals to, and apparently quotes, Porphyry:[22]

---

[19] *BoethDI(2)* 5 (II, 110): 'Est autem praeter has alia composita propositio ex propositionibus coniunctione coniuncta unam significans orationem, ut cum dico: Si dies est, lux est. Duae enim propositiones, quae sunt istae "dies est", "lux est", "si" coniunctione copulantur. Sed haec oratio non significat multa. Neque enim diem esse et lucem proponit sed si dies est, lucem esse. Quocirca consequentiam quandam significat, non exstantiam propositionis. Non enim dicit utrasque esse sed si una est, aliam consequi, quod utrumque in unam quodammodo intellegentiam congruit.' The puzzle here is '*exstantiam propositionis*' where we would expect '*essentia rei*'. Perhaps Boethius wishes us to understand the *essentia* corresponding to the proposition? This is the only place where we find '*exstantia*' in Boethius though he uses '*exstare*' for 'to exist' a number of times.

[20] Modern 'classical' logicians, that is. Intuitionists, for example, treat negation propositionally but not truth-functionally

[21] *De Int.,* 5, 17ª 23–24: Ἔστι δ' ἡ μὲν ἁπλῆ ἀπόφανσις φωνὴ σημαντικὴ περὶ τοῦ εἰ ὑπάρχει τι ἢ μὴ ὑπάρχει, ὡς οἱ χρόνοι διῄρηνται *AL* II. 1–2, 9: 'Est autem simplex enuntiatio vox significativa de eo quod est aliquid vel non est, quemadmodum tempora divisa sunt'.

[22] *BoethDI(2)* 6, (II, 122–23): 'Porphyrius autem sic dicit: admirabilem esse subtilitatem definitionis. Ex sua enim vi adfirmationis et negationis enuntiatio definita est, ex terminis vero ipsa adfirmatio et negatio. Adfirmatio namque in duobus terminis consistans aliquid alicui inesse significat, totam autem vim ipsius (est) esse aliquid adnuere. Negatio quoque aliquid alicui non inesse significat, sed tota vis ipsius est abnuere atque disiungere. Vel rursus adfirmatio aliquid alicui inesse designat, sed vis ipsius tota ponere aliquid est (cum enim aliquid alicui esse demonstrat, ponit aliquid), rursus negatio quidem aliquid alicui non inesse declarat, sed tota vis ipsius auferre est.'

> Porphyry, moreover, says the following: the subtlety of the definition is astonishing. For from its semantical power (*vis*) of affirmation and negation an assertion is defined; from its terms, affirmation and negation themselves. For an affirmation, consisting of two terms, signifies something to inhere in something. Its total semantical power, however, is to affirm (*adnuere*) being something. A negation signifies something not to inhere in something, but its total semantical power is to deny (*abnuere*) and disjoin. Alternatively, an affirmation indicates something to inhere in something, but its total semantical power is to posit something (for when it indicates something to inhere in something it posits something); a negation, on the other hand, declares something not to inhere in something, but its total semantical power is to take away.

Boethius is presumably using '*vis*' here for the Greek 'δύναμις' and it has just the same range of meanings. In the passage quoted above, however, a particular aspect of meaning is at stake which I call the semantical power of a verb or connective.[23] In the case of the former it is the power, when uttered as part of a simple proposition, to generate a composition or separation of understandings. Thus Boethius' comment on Aristotle's remark in *De Interpretatione* 5, that, unlike a noun, a verb is indispensible in a simple proposition:[24]

> For when I say 'it is day' (*dies est*) all the semantical power is in the verb; if, however, I say with a conjunction: 'if it is day, then it is light' (*si dies est, lux est*), all the semantical power lies in the conjunction, that is 'if'. For the conjunction, which proposes the condition, alone holds the reason for truth or falsity when it is said 'if it is day, then it is light': for if that is so, then this occurs. Therefore all the semantical power of this sort of proposition is in the conjunction. Every simple proposition, however, has its whole semantical power located in the verb.… For without that which contains the whole predicative proposition, that is apart from the predication, there is no assertion. Whence it is that negation should not

[23] For 'vis' in the more general sense of meaning see *BoethDI(2)* 7 (II, 136): 'Omnis propositio significationis suae proprietates ex subiectis intellectibus capit. Sed quoniam necesse est intellectus rerum esse similitudines, vis propositionum ad res quoque continuatur.'

[24] *BoethDI(2)* 5 (II, 105): 'Cum enim dico dies est, vis tota in verbo est: si autem cum coniunctione proferam si dies est, lux est, tota vis in coniunctione consistit id est si. Veritatis enim aut falsitatis rationem sola coniunctio tenet, quae condicionem proponit, cum dicit si dies est lux est: si enim illud est, illud evenit. Igitur in coniunctione omnis vis huiusmodi propositionis est, omnis autem simplex propositio totam vim in verbo habet positam.… Nam prater id quod totam continet propositionem praedicativam scilicet, id est praeter praedicationem, enuntiuatio non fit. Unde est ut negatio quoque non ad subiectum, sed ad praedicatum semper aptetur. Nam cum dico sol oritur, non est huius negatio non sol oritur sed sed illa quae est sol non oritur'. See *BoethDI(2)* 12 (II, 377–8)

> also be applied to the subject but always to the predicate. For when I say 'the sun is rising', the negation of this is not 'not the sun is rising' (*non sol oritur*), but rather this: 'the sun is not rising' (*sol non oritur*).

Boethius' claim here is that the subject of a simple assertion makes no contribution to its being an assertion. Its job is rather to indicate what the assertion is an assertion about. With the affirmation '*A est B*' being *B* is posited and with the negation '*A non est B*' it is taken away. In each case with respect to *A*.[25] All the work associated with assertion, of indicating positing and removal, or composition and division, is being done by the predicate verb and and so in talking generally about assertion there is no need to mention the subject. Thus what assertions do is to signify being-something or not-being-something.[26]

According to Boethius, then, to utter a simple proposition is to signify an understanding in just the same way that to utter a name is. It is to constitute or generate an understanding of something as posited in or as removed from something. To make a categorical assertion we pick out what we want to say something about with a noun phrase and what we want to indicate about it with a verb phrase. The saying, Boethius supposes, is effected by bringing the two together into a simple sentence. The mental effect of hearing such a sentence is that the understandings signified by the subject and predicate are combined or separated. In a conditional proposition, on the other hand, the verb somehow loses its power to bring about combination or separation. This is point is crucial for understanding Boethius' account of hypothetical propositions. The antecedent and consequent of a conditional cannot be parsed into subject and predicate since this analysis depends upon the power of the verb to conjoin two terms assertively.

The association of negation with the verb in the so called 'basic combination' of subject and predicate is a familiar observation which

---

[25] *BoethDI(2)* 7 (II, 174): '…ait enim (Aristoteles) unam semper negationem contra unam adfirmationem posse constitui et eius causam conatur ostendere, quod omnis negatio eosdem terminos habet in enuntiatione, sed enuntiationis modo diversa est. Nam quod ponit adfirmatio idem aufert negatio et quod illa praedicatum subiecto iungit hoc illa dividit atque disiungit.'

[26] *BoethDI(1)* 3, I, 64–65: 'Cum enim dico "currit" hoc ipsum "currit" significat quidem aliquid, sed si est aut non est nondum significat; neque enim esse signum est rei aut non esse. Quod tantum valet tamquam si dicam: id quod dico "currit" non significat esse ipsum cursum aut non esse. Si enim significaret, ita diceretur: "currere est" vel "currere non est". Nunc autem "currit" non designat esse ipsam rem vel non esse. Dicitur enim solum et est intellectus quidam, sed neque adfirmationem significat neque negationem, idcirco quod neque ponit rem esse neque eam interimit.'

Geach and Strawson have emphasized in their discussions of the categorical proposition. Strawson argues from negation as a 'natural' operation on propositions to the predication of the complementary predicate and from this association of negation with the predicate to the location of the mark of propositionality with the verb.[27] Boethius' explanation exactly reverses the order. In a simple assertion the work in assertion is done by the verb and to indicate a different kind of simple assertion one must act upon the verb.[28] Another kind of assertion may be made by using a connective and in such cases the verb has no power at all.

If Boethius had any use for a kind of assertion which stands to a conditional as negation does to the corresponding affirmation in the case of a categorical proposition, he would thus have to obtain it by modifying the connective. There is no place in his theory for such an assertion, however, since he does not think of a conditional as positing something which may be removed with negation. Since truth and falsity are found only in the composition and division of understandings, compound propositions must signify some sort of composition and division. Because they do not signify something about the same thing with respect to the same thing, however, a conditional and the corresponding disjunction cannot on Boethius' account of them be opposed as an affirmation and negation.

The Boethian account of affirmation and negation is exactly the kind of theory which Frege pilloried so unmercifully in his essay *Negation*.[29] Against it Frege argues that a proper account of negation and of propositional compounds in general must distinguish the content of a proposition, which he calls its sense, or the Thought that it expresses, from the judgement made about the content and its public expression as an assertion. Frege thus defines negation as an operation on propositional content which produces a new content defined to be false if the original is true and true if the original is false.

While Boethius, of course, holds that a simple affirmation and the corresponding negation divide truth and falsity this is not for him

---

[27] See Strawson 1974, Chapter 1.

[28] The same account of the verb as the element of a sentence indicating assertion seems to be found in Al Farabi's commentary on *De Interpretatione* though I can only speak for the English translation. There 'force' is used for 'quwwa' the Arabic translation of δύναμις, cf. al-Fârâbî 1981, lix n. 2, lix n. 2, and the index under δύναμις.

[29] Cf. n. 9.

part of the definition of negation but rather something which has to be proved. Since he holds that affirmation and negation signify two different types of understanding, even if we set aside the question of truth-functionality, we cannot permit him to introduce compound assertions in a way which ignores the quality of the components. An account such as his must explain case by case the meaning of each combination of connectives, verbs, and negation[30] and just such explanations for conditionals and disjunctions are set out in his work on hypothetical syllogisms.

Chapter 6 of *de Interpretatione* is the turning point of the work for Boethius. Affirmation and negation have been introduced but the relationship between them has not been established. Chapter 6 provides the proof that a basic affirmation and the corresponding negation divide truth and falsity between themselves. Given Aristotle's account of affirmation and negation, indefinite nouns and verbs may be defined in terms of negation: the indefinite noun '*non-homo*' is thus predicable of something just in case '*homo*' is not. The meaning of a proposition with a definite term for its subject and an indefinite term in its predicate is given by the definition but Aristotle says nothing about propositions with indefinite subjects. Boethius' *Introductio ad Syllogismos Categoricos,* however, contains a systematic investigation of the principles of obversion available for converting them to propositions with definite subjects.[31]

By appealing to term negation Boethius is able to produce a rather cheap argument against the Stoics. If we follow their practice, he says, and put the negative particle before the noun, we will not be able to tell whether a proposition such as '*non homo ambulat*' is a negation or an affirmation.[32] It is unlikely, I think, that he is being disingenuous here and indeed the same argument is found in Ammonius. There is no place in their philosophical logic for negation as a propositional operation.[33]

---

[30] Boethius is not alone, the twentieth century Russell and Wittgenstein treat negation as an indication of force rather than an operation on content so they too should have given a case by case account of force for all the various combinations of sentential operations. See the discussion of Wittgenstein in Dummett 1977, 323–27.

[31] Cf. Prior 1953. The principles of obversion can obviously help only if both subject and predicate are indefinite.

[32] *BoethDI(2)* 10 (II, 261–2).

[33] The same argument is given by Ammonius 1897, 87.

As I mentioned above, Aristotle does at one point in chapter 7 of *De Interpretatione* at least appear to prepose negation to a whole proposition and forms the contradictory opposite of 'every human is white' as 'not every human is white'. This, however, Boethius construes, as Aristotle certainly intends it, as equivalent to 'some human is not white.'[34] Boethius claims that Aristotle applies the negative particle to the quantity, the quantity, note, not the whole proposition, in order to avoid an ambiguity in '*omnis homo albus non est*' between the universal and the particular negation.

There is no similar possibility of ambiguity, he maintains' for '*quidam homo est albus*' so 'no one says "*non quidam homo est albus*".'[35]

This resolution gives Boethius the square of opposition relating the universal affirmation and negation to their various opposites.[36]

	Affirmation		*Negation*
Universal	Omnis homo est albus	|-- contrary --|	Nullus homo est albus
		\ /	
		Contradictory	
		/ \	
Particular	Quidam homo est albus	|-- subcontrary --|	Non omnis homo est albus (= Quidam homo non est albus)

[34] *BoethDI(2)* 5, (II, 144–145): 'Sed "quidam non" et "non omnis" particulares negationes sunt. Siue enim quis partem ex toto subripiat, particulare est quod relinquit, quia a totius perfectione discessit, siue quis totum esse neget, partem relinquat, rursus particulare est quod fit reliquum. Nam cum dico: "Quidam homo iustus non est" abstuli partem, et rursus cum dico: "Non omnis homo iustus est" cum negaui "omnem", aliquem qui iustus non esset ostendi. Haec igitur, "omnis" et "quidam", determinationes planissimae sunt et communi intellegentiae subiectae. Has duae particulares respiciunt negationes, ut ea quae est "quidam non" determinationem particularem negat, ea uero quae est "non omnis" uniuersalem negat determinationem sed utraque negationem (ut dictum est) in particularitatem constringunt.

[35] *BoethDI(2)* 7 (II, 144): 'Quotiens uero particulare aliquid tollitur, in his non iam ad determinationem sed ad praedicatum particula negationis apponitur, ut in eo quod est: "Quidam homo iustus est" nullus dicit: "Non quidam homo iustus est"

[36] Boethius holds that '*nullus*' = '*non ullus*' = *non unulus,* where 'unulus' is, as it were, the diminutive of 'unus' *BoethDI(2)* 7 (II, 147): 'Quare et omnem et quendam statim tollit negatio, quae unius quoque ipsius diminutiuum praedicatione subducit, ut ea quae est: "Nullus homo iustus est". Hoc enim tantum est, tamquam si dicat "Non ullus homo iustus est", hoc idem ualet tamquam si dicatur "Nec unus homo iustus est".'

As I noted above, Aristotle's remark about the use of 'tunic' to signify both human being and horse could be construed as a rejection of the claim of the copulative conjunction to be proposition forming. In a properly propositional logic, however, it must be just as much proposition forming as negation and the conditional connective. For if copulative conjunctions are not unitary propositions, then neither are sentences in which they occur embedded. Sentences, that is, such as those with which Aristotle formulates the theory of the categorical syllogism.[37] Boethius mentions copulative conjunction in commenting upon Aristotle's reference in *De Interpretatione* 5, to propositions unitary in virtue of a connective. The copulative connective, he insists does not form such propositions:[38]

> Another (multiple expression) is that composed either from terms or propositions coupled by a conjunction but multiple and signifying many. Composed from terms, for example if someone says: both Jupiter and Apollo are gods. Conjoined from propositions but signifying many, for example if someone says: both Apollo is a prophet and Jupiter thunders.

Again, Boethius is not being idiosyncratic here, Ammonius is in complete agreement.[39] I will not go on here to consider what Boethius has to say about other connectives since that would take me away from the *De Interpretatione*. What is clear, however, is that he has no notion of a propositional operator or of the propositional content upon which it operates. For these ideas we have to look to the twelfth century and first to the work of Abaelard.

Abaelard

Peter Abaelard discusses the questions which interest us both in commenting on *De Interpretatione* in his *Logica 'Ingredientibus'* and in considering the issues raised there in his *Dialectica*. The treatment

---

[37] E.g. *Prior Analytics*. I, 4, 25b37: εἰ γὰρ τὸ Α κατὰ παντὸς τοῦ Β καὶ τὸ Β κατὰ παντὸς τοῦ Γ, ἀνάγκη τὸ Α κατὰ παντὸς τοῦ Γ κατηγορεῖσθαι·

[38] *BoethDI(2)* 5 (II, 110–1): 'Alia uero est composita uel ex terminis uel ex propositionibus coniunctione copulatis multiplex et multa significans. Et ex terminis quidem composita, ut si quis dicat: Et Iuppiter et Apollo dii sunt ex propositionibus autem coniuncta multa significans est, ut si quis dicat: Et Apollo uates est et Iuppiter tonat.'

[39] *BoethDI(2)* 5 (II, 73).

in the *Dialectica* is earlier and there is a difference in terminology between the two. For Abaelard a *propositio*, translated here as 'proposition', is what we, if we were being careful, would call a propositional token. Boethius in *De Differentiis Topics* gives as a definition that a proposition is an expression 'signifying (the) true or (the) false.'[40] In the *Dialectica* Abaelard claims that this is entirely equivalent to Aristotle's definition of an assertive expression as 'what asserts something of something or something from something.'[41] This latter, however, is given by Aristotle only for predicative assertions while Boethius' introduces his definition without any such qualification. In the '*Ingredientibus*' Abaelard refers Aristotle's definition only to simple propositions and does not identify it with that given by Boethius. In the *Dialectica,* however, he apparently wishes to maintain only that predicative propositions are examples of items which satisfy Aristotle's definition and if that is so then his identification of the two is perfectly in order.[42] Possessing the notion of propositional content he can ignore the restriction to simple assertions; for him an affirmative assertion is an assertion that the world is a certain way, a negative assertion, an assertion that this is not the case.

In the *Dialectica* Abaelard borrows from Priscian and Boethius and goes beyond them in explaining that as well as being 'names' of propositions and of the understandings that they generate, 'true' and 'false':[43]

---

[40] Boethius, *De Differentiis Topicis*, I, PL 64, 1174B (Nikitas 1990, 2) 'Propositio est oratio uerum falsumue significans, ut si quis dicat caelum esse uolubile, haec et enuntiatio et proloquium nuncupatur.'

[41] (References to Abaelard's *Dialectica* [*Dial.*] are to Peter Abelard 1956.) *Dial.* II, i (153–54): 'Hae uero sunt propositiones quas supra diximus enuntiationes, quarum definitionem in Topicis suis Boethius secundum uerum aut falsum ita proponit: "Propositio est oratio uerum falsumue significans;" quae quidem definitio eadem omnia et sola continet cum ea quam superius secundum Aristotelem protulimus; in hoc tamen ab illa diuersa, quod illa secundum affirmationem et negationem, haec uero secundum uerum ac falsum propositionem determinant.'

[42] *Dial.* II, I (151): 'Enuntiatiuam autem eam Aristoteles definit quae enuntiat aliquid de aliquo uel aliquid ab aliquo, ut sunt illae quae affirmant praedicatum de subiecto uel negant, hoc modo: 'Socrates est homo, uel non est homo'. The phrase 'ut sunt' is used frequently by Abaelard in giving examples.

[43] *Dial.* II, i (154): 'Sunt etiam nomina existentiae rei uel non-existentiae de quibus ipsa propositio ait ac loquitur, ueluti cum dicimus: 'uerum est Socratem currere uel falsum', id est: 'ita est in re quod Socrates currit, uel non est in re'.… Sunt rursus 'uerum' ac 'falsum' nomina propositionum, ut cum dicimus propositio uera uel falsa, id est uerum uel falsum intellectum generans, siue proponens id quod in re est uel quod in re non est.'

> Are also names of the *existentiae rei* or *non existentiae* about which the proposition asserts and speaks, just as, when we say that it is true, or false, that Socrates runs, that is, it is the case that (*ita est in re quod*) Socrates runs or it is not the case. . . . we refer to a proposition as 'true' or 'false', that is, (as) generating true or false understanding or (as) proposing that which is the case or is not the case.

Here, it seems to me to be clearly best to translate the whole phrase '*existentia rei*' as 'state-of-affairs'. According to Abaelard in the *Dialectica* it is *existentiae rerum* that logical relations are relations between. True conditionals, he argues, express a relation of consecution, or consequence, which holds independently of the existence of minds and independently of actual facts about the world. They hold indeed even where the antecedent is necessarily false as in the case of 'if Socrates is an ass, then Socrates is an animal'. According to Abaelard the rule of inference *modus ponens*, if an antecedent is posited then so is each consequent, must thus be expounded in terms of the consequence relation between states-of-affairs:[44]

> . . . if some antecedent *essentia rerum*[45] exists, it is necessary that each *existentia rerum* which is consequent upon it exists.

Although, as in the rule just given, they are apparently properly said to exist, Abaelard goes on in the *Dialectica* to argue, that *existentiae rerum* are not things, that is they are not *res*, or equivalently for Abaelard, *essentiae*, like Socrates. The translation of *existentia rei* as state-of-affairs must thus be used with care. There can be no suggestion that these states-of-affairs are items in Abaelard's ontology for that consists entirely of individual substances and individual accidents.

---

[44] *Dial.* II, i (155): 'Et in hac quidem significatione eorum quae propositiones loquuntur, uera tamen exponitur regula quae ait: posito antecedenti poni quodlibet consequens eius ipsius hoc est existente aliqua antecedenti rerum essentia necesse est existere quamlibet rerum existentiam consequentem ad ipsam.'

[45] In the *Dialectica* and elsewhere Abaelard uses the phrases '*existentia rei*' and '*non-existentia rei*' only with the meanining of 'state-of-affairs. In the *Dialectica* we also find '*essentia rei*' apparently used with the same meaning but '*non essentia rei*' does not occur anywhere in his writings. In the *Dialectica* '*essentia rei*' is much more frequently used to mean the being of a thing, properly signified by a noun, rather than by a proposition. This suggests that Abaelard himself might have used only '*existentia rei*' with the meaning state of affairs and that the appearance of '*essentia rei*' where we might expect '*existentia*' might be due to misreadings of the text at some stage in its transmission. Otherwise Abaelard is apparently guilty of incoherence, *Dial.* III. i, (283): 'Ex hypotheticis autem categoricas alias sequi non recipimus nisi negatiuas; quippe omni rerum essentia destructa consecutionis non uiolatur necessitas . . .'

In the '*Ingredientibus*' Abaelard introduces propositional content in his commentary on *De Interpretatione* 4. Propositions signify not only the understandings which they generate but also that which they propose, or say (*dicit*), to be so. This Abaelard refers to in the '*Ingredientibus*' as the '*dictum*' of the proposition. '*Dicta*', Abaelard insists are nothing at all but nevertheless it is *dicta* which logical relations are relations between, and *dicta* which ground modal claims. There certainly is no necessary connection between generated understandings but a necessary connection between the antecedent and consequent is required for the truth of, for example, 'if something's a rose, then it's a flower' and the connection must hold whether or not there are any roses or indeed flowers of any kind.[46]

In the '*Ingredientibus*' Abaelard thus again appeals to propositional content as that which an assertion asserts to be so. He gives it a different name but it seems to me that everything he says in the '*Ingredientibus*' indicates that he thinks of *dicta* there just as he thought of *existentiae rerum* in the *Dialectica* as what we would call states-of-affairs. His change of terminology was perhaps motivated by the desire to do away with any suggestion carried by '*existentia*'[47] that we have to do with things.

When Abaelard is being precise and careful he makes the distinction between assertive force and content by saying things such as 'propositions signify their *dicta* in proposing', 'propositions propose their *dicta*',[48] and better, that 'an assertive expression is one which in asserting proposes what is true or false.'[49] He could thus have distin-

---

[46] (References to Abaelard *Logica Ingredientibus* commentary on *De Interpretatione* (*LIDeInt*) are to Peter Abelard 1927). *De. Int.* 4 (366): 'At uero nec intellectus propositionis in se necessitatem ullam habet, quod est actio transitoria. Aliud ergo oportet significari a propositione, pro quo necessaria dici possit, ueluti, cum istam consequentiam: "Si est rosa, est flos" ueram semper etiam destructis rebus et necessariam concedamus, oportet uideri, pro quo significato necessaria iudicetur.'

[47] And even more so by '*essentia*' if this is the term which Abaelard used in the *Dialectica*.

[48] *LIDe. Int.* 4 (370): 'Ad quod illud praedicendum est, quod cum propositiones dicta sua proponendo (significent), non (tamen) de eis intellectus constituunt. Nam nomina uel uerba uel orationes intellectus suos significant, non tamen de intellectibus alios iterum intellectus constituunt. Sic et propositiones dicta sua proponunt et intellectus compositos ex intellectibus partium constituunt. Unde oportet (per) propositiones non dicta intelligi, sed res in intellectu complecti.'

[49] *LIDe Int* 1 (327): 'Ad quod respondemus quod in definitione propositionis significare uerum uel falsum non secundum intellectum accipiendum est, sed secundum dicta propositionum, id est enuntiando proponere id quod est in re uel non est in re.

guished between assertion and the various other speech acts in terms of different kinds of force applied to the same content. In fact, however, though he says some interesting things about speech acts he has relatively little to say about the relation between them. Presumably there would be have been more in his *Rhetorica* if he in fact kept his promise to write such a work. Despite his lack of interest here Abaelard does, however, strikingly observe in *Dialectica* that:[50]

> When I say 'Come to me' or 'Would that you would come to me', I propose in a certain way the inherence of coming to me with respect to my command, or my desire.

In the '*Ingredientibus*', furthermore, Abaelard notes that he might indicate a desire both by saying 'Would that the king should come' and 'I hope that the King comes'. The latter, however, he regards as a report on the state of his will where the former is an expression of it. Thus:[51]

> The former proposition is not the same as the latter, because although it would generate the same understanding, it does not have the mode of assertion, so, that is, as to propose being or not being.

As I noted, without the distinction between force and content, Aristotle, and following him Boethius, cannot give a general recursive account of compound propositions since they have no means for distinguishing unasserted components from the asserted whole. Abaelard can do this and so, for example, notes explicitly that the antecedent and consequent of a conditional are not asserted when the whole is asserted.

Enuntiare autem non possumus nisi affirmando uel negando, nulla autem imperfecta oratio affirmat uel negat atque ideo nil enuntiando proponit. Op. cit., *De Int*., 5, 375: Sed NON OMNIS oratio est ENUNTIATIVA, SED illa tantum IN QUA VERUM VEL FALSUM EST, hoc est quae uerum uel falsum enuntiando proponit.'

[50] *Dial.*, II.1 (149): 'Cum enim dico: "ueni ad me" uel "utinam uenires ad me", quodammodo inhaerentiam ueniendi ad me propono secundum iussum meum uel desiderium meum, in eo scilicet quod iubeo illi ut uenire ei cohaereat, uel desidero, id est ut ipse ueniat.'

[51] *LI De Int.* 5 (374): 'Attende etiam huiusmodi species perfectarum orationum intellectibus non differre. Cum enim dico Utinam rex ueniret, idem intelligitur, ac si diceretur Opto, ut rex ueniat, et in utraque innuo uoluntatem inesse mihi de aduentu regis. Non tamen haec propositio est sicut illa, quia licet et eundem intellectum generet non habet enuntiationis modum, ut uidelicet esse uel non esse proponat. Similiter cum dico imperando uel deprecando Veni Socrates, imperium esse mihi uel deprecationem intellectu capitur. Unde secundum modum enuntiandi magis enuntiationes, id est propositiones, conuenit dici quam secundum intellectum.'

A propositional operation is an operation on a propositional content to produce another propositional content. Negation is the simplest such operation. If it is defined truth-functionally it takes any propositional content and produces another which is false if the first is true and true if it is false. There is no trace of any such operation in Boethius' commentaries on Aristotle nor anywhere else in his works. I cannot, however, quite, claim for Abaelard the invention in Latin logic of the notion of propositional negation. It is possible that it was known to his predecessors since it appears in very limited way in a discussion of the appropriate way to negate a conditional in the *Dialectica* of Garlandus.[52]

Abaelard, however, is the first Latin logician we know of who talks about propositional negation in general and applies it both to simple and to compound propositions. He goes further, indeed, and makes a distinction between two kinds of negation. What he calls 'extinctive', or 'destructive negation' is our propositional negation. Syntactically it is formed by preposing the negative particle to a proposition. What Abaelard calls 'separative' negation, on the other hand, is formed by applying the negative particle to the verb. The separative negation '*S* is not *P*' of the simple affirmation '*S* is *P*' is, according to Abaelard, its contrary and true just in case *S* is exists but is not *P*. The contradictory of any proposition, on the other hand, is its extinctive negation. It divides truth and falsity with it, whether or not, in the case if a categorical proposition, its subject exists.

Abaelard is understandably keen to find support in Aristotle for this account of negation and does so in the claim that I mentioned above that the contradictory of '*omnis homo est albus*' is '*non omnis homo est albus*'. Boethius' interpretation of the latter, Abaelard thinks, is explained by his assuming that the subject term is never empty. If that assumption is dropped, then separative and extinctive negation behave differently and so Abaelard can say that:[53]

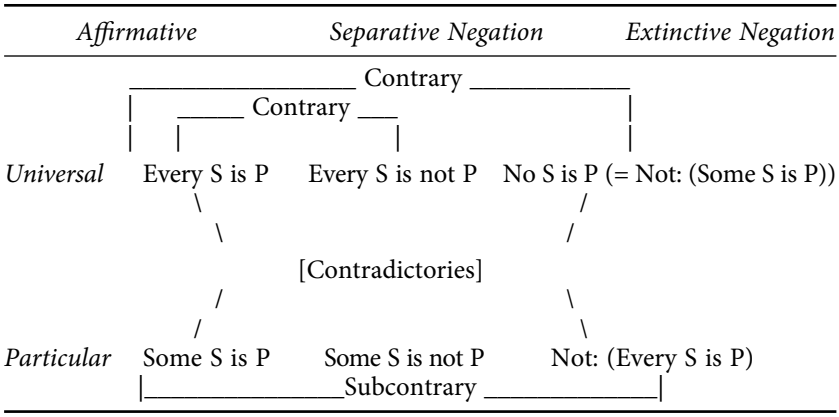
---

[52] Garlandus Compotista, *Dialectica* VI (Garlandus 1959, 133).

[53] *LI De Int.* 7 (409): 'Nos autem uim uerborum iuxta Aristotelem expressius attendentes diuersas semper exstinctiuam et separatiuam iudicamus esse in sensu, ut Quidam homo non est albus et Non omnis homo est albus, et quia in subiecto separatiuae quaedam positio fit, cum dicitur: quidam homo, ac si dicatur quoddam animal affectum rationalitate et mortale, nunquam ueram concedimus separatiuam nisi permanente re subiecti, exstinctiua uero re quoque destructa uera permanere potest.'

> We, however, attending more closely to Aristotle's words judge that extinctive and separative negation are always different in sense, for example 'some human is not white', and 'not every human is white', and because there is certain positing, when it is said 'some human', which is as if to say 'some animal affected by rationality and morality', we never concede the separative if the subject thing does not persist. The extinctive, however, may hold also with the thing destroyed.

Where Boethius had a square of opposition, Abaelard thus stakes out a rectangle:



While a close reading of Aristotle gives him the result that he wants here, there is nothing that Abaelard can do to to save Boethius. We saw above that Boethius rejected the claim of the copulative conjunction to be proposition forming. It is a measure of Abaelard's insight as a logician that he sees that it must in fact be so. We can deny conjunctions and we can embed them in conditionals and disjunction so they must have a single sense. In a remark which summarises the first great achievement of mediaeval logic Abaelard thus corrects Boethius:[54]

[54] *LIDe Int.* 8 (380): 'Cum enim concedat unam esse propositionem Si dies est, lux est, in qua diuersae propositiones ad unum sensum reducuntur per coniunctionem praepositam, non uideo, quare una propositio dici non possit Et Apollo uates est et Iupiter tonat sicut Quando Apollo uates est, Iupiter tonat. Unde et utraque unam potest habere diuidentem, ut sicut dicimus Non si dies est, lux est, ita etiam dicamus Non et Apollo uates est et Iupiter tonat.'

> Since he concedes that 'if it's day, then it's light' is a single proposition in which different propositions are reduced to the sense of one proposition by the preposed conjunction, I do not see why 'both Apollo is a prophet and Jupiter thunders', cannot be said to be a single proposition, just as 'when Apollo is a prophet, Jupiter thunders'. Whence each may have a single dividing opposite, so that as we say 'not: (if it's day, then it's light)', so also we should say 'not: (both Apollo is a prophet and Jupiter thunders)'.

It is clear that Abaelard fully understood the nature of propositional operations and was thus was able to lay the foundations of propositional logic. In this he went far beyond anything available to him from ancient logic and indeed far beyond anything which would later be available to his successors or to us.

Abaelard, I hope I have begun to show here, deserves to be recognised as as important a philosophical logician as Frege and his work as a development in thinking about logic that was not matched until the rediscovery of propositionality in the nineteenth century. More than that, we can see that Abaelard was right about the logic of propositions and that Boethius, whatever the explanation for his confusions,[55] was wrong. We can see this, however, only because we have have ourselves understood what is required for a logic to be propositional and it is from this point of view that we must write our history of propositional logic.

[55] A historical but not a philosophical question.

BIBLIOGRAPHY

Abbreviations

AL	*Aristoteles latinus*
BGPMA	Beiträge zur Geschichte der Philosophie des Mittelalters
CAG	Commentaria in Aristotelem graeca
CIMAGL	*Cahiers de l'Institut du moyen âge grec et latin*
PL	*Patrologia Latina*, ed. J.-P. Migne

Medieval Works

Albert of Saxony (1490) *Sophismata*, Paris.

Albert the Great (1960) *Metaphysica, libri quinque priores*, ed. B. Geyer, Münster: Aschendorff (Alberti Magni Opera omnia XX).

—— (2004) *Super Porphyrium de V universalibus*, ed. M.S. Noya, Münster: Aschendorff, 2004 (Alberti Magni Opera omnia 1.1).

al-Fârâbî (1981) *Al-Farabi's Commentary and Short Treatise on Aristotle's 'De Interpretatione'*, trans. F.W. Zimmermann, London: The British Academy.

Ammonius (1897) *In Aristotelis De Interpretatione Commentarius*, ed. A. Busse, Berlin: Reimer (CAG 4.5)

—— (1899) *In Aristotelis Analyticorum Priorum librum I commentarius*, ed. M. Wallies, Berlin: Reimer (CAG 4.6)

Anonymous (1988) *Quaestiones super librum Praedicamentorum*, ed. R. Andrews, *CIMAGL* 56, 117–192.

—— (2008) *Commentarium in Praedicamenta Aristotelis*, ed. H. Hansen, *CIMAGL* 78, 111–203.

Anselm (1946–) *Opera Omnia*, ed. F.S. Schmitt, Edinburgh: Nelson.

Aquinas (1882–) *Opera Omnia iussu impensaque Leonis XIII, P.M. edita*, Vatican City: Vatican Polyglot Press.

—— (1971) *In duodecim libros Metaphysicorum Aristotelis expositio*, 2nd edition, ed. M.-R. Cathala and R.M. Spiazzi, Turin: Marietti.

Aristotle (1562) *Aristotelis opera cum Averrois commentariis*, Junta: Venice (reprint Frankfurt: Minerva, 1962).

—— (1949) *Prior and Posterior Analytics*, ed. W.D. Ross, Oxford: Oxford University Press.

—— (1994) *Posterior Analytics.* transl. J. Barnes, Oxford: Oxford University Press.

—— (2005) *Seconds analytiques. Organon IV*, transl. P. Pellegrin, Paris: Flammarion.

Augustine (1975) *De dialectica*, ed. J. Pinborg, transl. B. Darrell Jackson, Dordrecht: Reidel (Synthese Historical Library 16).

Averroes (1562–74a) *Commentary on the Physics*, Venice: Junta (Aristotelis opera cum Averrois commentariis 4).

—— (1562–74b) *Commentary on the De generatione animalium*, Venice: Junta (Aristotelis opera cum Averrois commentariis 6).

—— (1562–74c) *Commentary on the Metaphysics*, Venice: Junta (Aristotelis opera cum Averrois commentariis 8).

—— (1938–48) *Tafsīr mā baʿd aṭ-ṭabīʿa*, ed. M. Bouyges, Beirut: Imprimérie Catholique (Bibliotheca Arabica Scholasticorum, Série Arabe 1–3).

—— (1982) *Paraphrase de la Logique d'Aristote*, II, ed. G. Jéhamy, vol. II, Beirut: al-Ǧāmiʿa al-Lubnāniyya.

—— (1984a) *Grand commentaire et paraphrase des Seconds Analytiques d'Aristote*, ed. ʿA. Badawi, Kuwait: al-Maǧlis al-Waṭanī li-l-Ṭaqāfa wa-l-Funūn wa-l-Ādāb.
—— (1984b) *Talḫīs al-samāʾ wa-l-ʿālam*, Fās: Kulliyyat al-Ādāb wa-l-ʿUlūm al-Insāniyya bi-Fās.
—— (2002) *Grand commentaire (Tafsīr) de la Métaphysique (Livre Beta)*, transl. L. Bauloye, Paris: Vrin.
—— (2003) *Commentum magnum super libro De celo et mundo Aristotelis* I, ed. R. Arnzen, Leuven: Peeters.
Avicenna (1508) *Avicennae peripatetici philosophi ac medicorum facile primi opera in lucem redacta*, Venice; Octavianus Scotus (reprint Frankfurt; Minerva 1961).
—— (1952) *Al-Šifāʾ, al-Manṭiq, al-Madḫal*, ed. Ǧ.Š. Qanawatī, M. Al-Ḫuḍayrī, A.F. Al-Ahwānī, Cairo: Al-Maṭbaʿa al-amīriyya.
—— (1956), *Al-Burhān min Kitāb al-Šifāʾ*, ed. ʿA. Badawī, Cairo: Maktabat al-Nahḍa al-Miṣriyya.
—— (1959) *Al-Šifāʾ, al-Manṭiq, al-Maqūlāt*, ed. Ǧ.Š. Qanawatī, M. Al-Ḫuḍayrī, A.F. Al-Ahwānī, S. Zāyid, Cairo: al-Hayʾa al-ʿāmma li-šuʾūn al-maṭābiʿ al-amīriyya.
—— (1960a) *Al-Šifāʾ, al-Ilāhiyyāt*, ed. Ǧ.Š. Qanawatī, S. Zāyid, Cairo: al-Hayʾa al-ʿāmma li-šuʾūn al-maṭābiʿ al-amīriyya.
—— (1960b) *Al-Šifāʾ, al-Ilāhiyyāt*, ed. M.Y. Mūsā, S. Dunyā, S. Zāyid, Cairo: al-Hayʾa al-ʿāmma li-šuʾūn al-maṭābiʿ al-amīriyya.
—— (1961) *Opera philosophica*, Franfurt: Minerva (reprint of Venice, 1508 edition).
—— (1964) *Al-Šifāʾ, al-Manṭiq, al-Qiyās* (reworking of Aristotle's *Prior Analytics*), ed. S. Zāyid, Cairo: al-Hayʾa al-ʿāmma li-šuʾūn al-maṭābiʿ al-amīriyya.
—— (1965) *Al-Šifāʾ, al-Manṭiq, al-Ǧadal*, ed. A.F. Al-Ahwānī, Cairo: al-Hayʾa al-ʿāmma li-šuʾūn al-maṭābiʿ al-amīriyya.
—— (1977, 1980) *Liber de Philosophia prima sive Scientia divina, I–IV*, ed. S. Van Riet, Louvain and Leiden: Peeters and Brill.
—— (2005) *The Metaphysics of 'The Healing'. A parallel English-Arabic text*, transl. M.E. Marmura, Provo, UT: Brigham Young University Press.
—— (1956) *Al-Šifāʾ, al-Manṭiq, al-Burhān*, ed. A. ʿAfīfī, Cairo: al-Maṭbaʿa al-amīriyya.
Boethius (1847) *Opera = PL* 64.
—— (1990) *De topicis differentiis und die byzantinische Rezeption dieses Werkes: Anhang, Eine Pachymeres-Weiterbearbeitung der Holobolos-Übersetzung*, ed. D.Z. Nikitas, Athens and Paris: The Academy of Athens and Vrin (Corpus Philosophorum Medii Aevi Philosophi Byzantini 5).
—— (1998) *De Divisione liber*, ed. and transl. J. Magee, Leiden: Brill.
Boethius of Dacia (1969) *Modi significandi*, ed. J. Pinborg, Copenhagen: Gad (Corpus Philosophorum Danicorum Medii Aevi 4).
—— (1976) *Quaestiones super librum Topicorum*, ed. N.G. Green-Pedersen and J. Pinborg, Copenhagen: Gad (Corpus Philosophorum Danicorum Medii Aevi 6.1).
Diogenes Laertius (1999) *Vitae philosophorum*, ed. M. Marcovich, Leipzig: Teubner.
Domingo de Soto (1529), *Summulae*, Burgos.
—— (1539–1540), *Aeditio secunda summularum*, Salamanca.
Garlandus (1959) *Dialectica*, ed. L.M. De Rijk, Assen: Van Gorcum.
George of Brussels (1491) *Expositio super summulas Petri Hispani*, Paris.
Giles of Rome (1500) *Expositio supra libros Elenchorum*, ed. Augustinus de Meschiatis de Bugella, Venice.
Gundissalinus (1903) *De divisione philosophiae*, ed. L. Baur, Münster: Aschendorff (BGPM 4.2–3).
John Buridan (1509) *Quaestiones super octo Physicorum libros Aristotelis*, Paris.
—— (1976) *Tractatus de consequentiis*, ed. H. Hubien, Louvain and Paris: Publications Universitaires and Vander-Oyez (Philosophes médiévaux 16).
—— (1985) *Jean Buridan's Logic: the Treatise on Supposition, the Treatise on Consequences*, transl. P. King, Dordrecht: Reidel (Synthese Historical Library 27).

—— (n.d.). *Summulae de dialectica*, ed. Hubert Hubien, unpublished MSS.
—— (2001) *Summulae de dialectica*, tr. G. Klima, New Haven and London: Yale University Press.
—— (2004) *Summulae de practica sophismatum*, Turnhout: Brepols (Artistarium 10–9).
John of Dacia (1955) *Opera*, ed. A. Otto, Copenhagen: Gad (Corpus philosophorum danicorum medii aevi 1.1–2)
John Philoponus (1930) *Opuscula monophysitica*, ed. and transl. A. Sanda, Beirut: Typographia Catholica PP. Soc. Jesu.
Juan Celaya (1526), *Magne suppositiones*, Paris.
Lambert of Auxerre (1971). *Logica (Summa Lamberti)*, ed. F. Alessio, Florence: La Nuova Italia.
Matthew of Orleans (2001) *Sophistaria*, ed. J. Spruyt, Leiden: Brill.
Moses Maimonides (1963) *The Guide of the Perplexed*, transl. S. Pines, Chicago: University of Chicago Press.
Paul of Pergula (1961) *Logica* and *Tractatus de sensu composito et diviso*, ed. M.A. Brown, St. Bonaventure, NY, Louvain and Paderborn: The Franciscan Institute, Nauwelaerts and Schöningh.
Peter Abelard (1919–33) *Peter Abaelards Philosophische Schriften*, ed. B. Geyer, Münster: Aschendorff (BGPM 21).
—— (1956) *Dialectica*, ed. L.M. de Rijk, Assen: Van Gorcum.
—— (1969) *Opera theologica* II, ed. E.M. Buytaert, Turnhout: Brepols (Corpus Christianorum continuatio mediaeualis 12)
—— (1970) *Dialectica*, ed. L.M. de Rijk (2nd edn) Assen: Van Gorcum.
Peter of Auvergne (1987) *Quaestiones super Praedicamentis*, ed. R. Andrews, *CIMAGL* 55, 3–84.
Peter of Spain (1964) *Tractatus syncategorematum and selected anonymous treatises*, trans. J.P. Mullally, Milwaukee: Marquette University Press.
—— (1972) *Tractatus called afterwards Summule logicales*, ed. L.M. de Rijk, Assen: Van Gorcum.
—— (1992) *Syncategoreumata*, ed. L.M. de Rijk, transl. J. Spruyt, Leiden, Cologne and New York: Brill.
Petrus Fonseca (1964) *Instituições dialécticas. Institutionum dialecticarum libri octo*, ed. J. Ferreira Gomes, Coimbra: Universidade de Coimbra.
Porphyry (1887) *Porphyrii Isagoge et in Aristotelis Categorias commentarium*, ed. A. Busse, Berlin: Reimer (CAG 4.1).
Priscian (1855, 59) *Institutiones grammaticae*, ed. H. Keil, Leipzig: Teubner (Grammatici Latini 2–3).
Pseudo-Joscelin (n.d.) *De generibus et speciebus*, ed. P. King, forthcoming.
Radulphus Brito (1978) *Commentary on Boethius' 'De differentiis topicis'*, ed. N.J. Green-Pedersen, *CIMAGL* 26, 1–92.
Ralph Strode (1517), *Consequentie Strodi* […] *Dubia magistri Pauli Pergulensis* […], Venice.
Robert Kilwardby (1516) *In libros Priorum Analyticorum expositio*, Venice, under the name of Giles of Rome (reprint Frankfurt: Minerva, 1968).
—— (2003/4) *Notule libri Posteriorum*, ed. D. Cannone. Unpublished thesis, Rome.
Roger Bacon (1986) *Summulae dialectices*, ed. A. de Libera, 'Les *Summulae dialectices* de Roger Bacon. I. *De termino*. II. *De enuntiatione*', *Archives de l'histoire doctrinale et littéraire du moyen âge* 53, 139–289.
Simon of Faversham (1957) *Magistri Simonis Anglici sive de Faverisham Opera omnia. 1. Opera logica.* I, ed. P. Mazarella, Padua: Ceda (Pubblicazioni dell'Istituto universitario di magistero di Catania, serie filosofica, testi critici 1).

—— (1984) *Quaestiones super libro Elenchorum*, ed. S. Ebbesen, T. Izbicki, J. Longeway, F. del Punta, E. Serene and E. Stump, Toronto: Pontifical Institute for Mediaeval Studies (Studies and Texts 60).
Simplicius (1907) *Simplicii in Aristotelis Categorias commentarium*, ed. C. Kalbfleish, Berlin: Reimer (CAG VIII).
—— (2001) *Commentaire sur les* Catégories *d'Aristote. Chapitres 2–4*. transl. P. Hoffmann, commentary by C. Luna, Paris: Les Belles Lettres.
Thomas Aquinas (1950) *In duodecim libros Metaphysicorum Aristotelis expositio*, ed. R. Spiazzi, Turin: Marietti.
Walter Burley (1966) *De toto et parte*, ed. H. Shapiro and F. Scott, *Archives d'histoire doctrinale et littéraire du moyen âge* 33, 299–303.
William of Ockham (1980) *Ockham's Theory of Propositions: part II of the Summa Logicae*, transl. A.J. Freddoso and H. Schuurma, Notre Dame, IND: University of Notre Dame Press.
—— (1974) *Summa logicae*, ed. P. Boehner, G. Gál and S. Brown, St. Bonaventure, NY: The Franciscan Institute (Guillelmi de Ockham Opera philosophica 1).
—— (1974–88). *Opera philosophica*, 7 volumes, ed. P. Boehner et al., Buffalo, NY; The Franciscan Institute.
William of Sherwood (1995), *Introductiones in logicam*, ed. H. Brands and C. Kann, Hamburg: Meiner.

Post-Medieval Works

Adams, M. (1976) 'What Does Ockham Mean by 'Supposition'?', *Notre Dame Journal of Formal Logic* 17 (3), 375–391.
Aertsen, J., K. Emery and A. Speer, eds (2001) *Nach der Verurteilung von 1277*, Berlin and New York: De Gruyter (Miscellanea Mediaevalia 28).
Arlig, A. (2006) 'Medieval Mereology', *The Stanford Encyclopedia of Philosophy* (Summer 2006 Edition), URL = http://plato.stanford.edu/archives/sum2006/entries/mereology-medieval/).
—— (2007) 'Abelard's Assault on Everyday Objects', *American Catholic Philosophical Quarterly* 81, 209–27.
Armstrong, D.M. (1997) *A World of States of Affairs*, Cambridge: Cambridge University Press.
Ashworth, E.J. (1974) *Language and Logic in the Post-Medieval Period*, Dordrecht: Reidel.
—— (1976) 'Will Socrates Cross the Bridge? A Problem in Medieval Logic', *Franciscan Studies* 36, 75–84 (reprinted as Study XII in E.J. Ashworth, *Studies in Post-Medieval Semantics*, Aldershot: Variorum, 1985).
—— (1988) 'Changes in Logic Textbooks from 1500–1650: the New Aristotelianism' in *Aristotelismus und Renaissance*, ed. E. Kessler, C.H. Lohr, W. Sparn, Wiesbaden: Harrassowitz, 75–87.
—— (1989) 'Boethius on Topics, Conditionals and Argument-Forms', *History and Philosophy of Logic* 10, 213–25.
—— (2003) 'Language and Logic' in *The Cambridge Companion to Medieval Philosophy*, ed. A.S. McGrade, Cambridge: Cambridge University Press, 73–96.
—— (2008) 'Developments in the Fifteenth and Sixteenth Centuries' in Gabbay and Woods 2008, 609–43.
Bertolacci, A. (2004) 'La ricezione del libro Γ della *Metafisica* nell'*Ilāhiyyāt* del *Kitāb al-Šifāʾ* di Avicenna' in *Aristotele e i suoi esegeti neoplatonici. Logica e ontologia nelle interpretazioni greche e arabe*, ed. V. Celluprica, C. D'Ancona and R. Chiaradonna, Naples: Bibliopolis, 173–210.

—— (2006) *The Reception of Aristotle's* Metaphysics *in Avicenna's* Kitāb al-Šifāʾ: *a milestone of western metaphysical thought*, Leiden and Boston: Brill (Islamic Philosophy, Theology and Science, Texts and Studies 63).
—— (2007) 'Avicenna and Averroes on the Proof of God's Existence and the Subject-Matter of Metaphysics', *Medioevo*, 32, 61–97.
Bischoff, B. and Hofmann, J. (1952) *Libri Sancti Kyliani. Die Würzburger Schreibschule und die Dombibliothek in VIII. und IX. Jahrhundert*, Würzburg: F. Schöningh.
Black, D.L. (1997) 'Avicenna on the Ontological and Epistemic Status of Fictional Beings', *Documenti e studi sulla tradizione filosofica medievale* 8, 425–453.
Bobzien, S. (1999) 'Logic: III, The Stoics' in *The Cambridge History of Hellenistic Philosophy*, ed. K. Algra et al., Cambridge: Cambridge University Press, 92–177.
Bocheński, I.M. (1961) *A History of Formal Logic*, transl. and ed. I. Thomas, Notre Dame, IN: University of Notre Dame Press.
Boehner, P. (1952) *Medieval Logic: an outline of its development from 1250 – c. 1400*, Manchester: Manchester University Press.
Boh, I. (1993) *Epistemic Logic in the Later Middle Ages*, London: Routledge.
Brower, J. and K. Guilfoy, eds (2004) *The Cambridge Companion to Abelard*, Cambridge: Cambridge University Press.
Brown, S. (1993) 'Medieval Supposition Theory in its Theological Context,' *Medieval Philosophy and Theology* 3, 121–157.
Burnyeat, M. (2001) *A Map of Metaphysics Zeta*, Pittsburgh: Mathesis Publications.
Church, A. (1956) *An Introduction to Mathematical Logic* I, Princeton, NJ: Princeton University Press.
Corcoran, J. and J. Swiniarski (1978) 'Logical Structures of Ockham's Theory of Supposition', *Franciscan Studies* 6, 161–183.
Cousin, V., ed. (1836) *Ouvrages inédits d'Abélard*, Paris: Imprimerie Royale.
Cross, R. (1999) 'Ockham on Part and Whole', *Vivarium* 37, 143–67.
—— (2002a) 'Individual Natures in the Christology of Leontius of Byzantium', *Journal of Early Christian Studies* 10, 245–265.
—— (2002b) 'Gregory of Nyssa on Universals', *Vigiliae Christianae* 56, 372–410.
Daley, B.E. (1984) 'Boethius' Theological Tracts and Early Byzantine Scholasticism', *Mediaeval Studies* 46, 158–191.
—— (1993) '"A Richer Union". Leontius of Byzantium and the relationship of human and divine in Christ', *Studia Patristica* 24, 239–265.
—— (2002) 'Nature and the "Mode of Union": late patristic models for the personal unity of Christ' in *The Incarnation. An interdisciplinary symposium on the incarnation of the Son of God*, ed. S.T. Davis, D. Kendall and G. O'Collins, Oxford: Oxford University Press, 164–196.
Daston, L. (1998) 'Probability and Evidence' in *The Cambridge History of Seventeenth-Century Philosophy*, ed. in D. Garber and M. Ayers, Cambridge: Cambridge University Press, 1108–44.
Dawson, H. (2007) *Locke, Language and Early-Modern Philosophy*, Cambridge: Cambridge University Press.
Dell'Osso, C. (2003) 'Still on the Concept of *enhypostaton*', *Augustinianum* 43, 62–80.
Di Giovanni, M. (2003) 'La definizione delle sostanze sensibili nel Commento Grande (*Tafsīr*) di Averroè a *Metafisica* Z 10', *Documenti e studi sulla tradizione filosofica medievale* 14, 27–63.
—— (2006) 'Averroes on the Species of Celestial Bodies', *Miscellanea Mediaevalia* 33, 438–464.
Doig, J.C. (1972) *Aquinas on Metaphysics. A historico-doctrinal study of the Commentary on the Metaphysics*, The Hague: Martinus Nijhoff.
Donati, S. (2001) 'Utrum accidens possit existere sine subiecto. Aristotelische Metaphysik und christliche Theologie in einigen ungedruckten Physikkomentaren des ausgehenden 13. Jh.' in Aertsen , Emery and Speer 2001, 577–617.

Dummett, M. (1977) *Frege, Philosophy of Language*, London: Duckworth.
Dutilh-Novaes, C. (2005) *Formalisations après la lettre*, at http://staff.science.uva.nl/~dutilh/theses.html
—— (2007) *Formalizing Medieval Logic: suppositio, consequentiae and obligationes*, Dordrecht: Springer (Logic, Epistemology and the Unity of Science 7).
Ebbesen, S. (1981) 'The Present King of France wears Hypothetical Shoes with Categorical Laces. Twelfth-century writers on well-formedness', *Medioevo* 7, 91–113 (reprint in Ebbesen 2009).
—— (1982) 'Ancient Scholastic Logic as the Source of Medieval Scholastic Logic' in Kretzmann, Kenny and Pinborg 1982, 101–27.
—— ed. (1999) 'Anonymous D'Orvillensis' Commentary on Aristotle's *Categories*', *CIMAGL* 70, 229–423.
—— (2001) 'Radulphus Brito on the *Metaphysics*' in Aertsen, Emery and Speer 2001, 450–492 (reprint in Ebbesen 2009).
—— (2002) 'Communia "Visitatio" & Communia "Feminae"', *CIMAGL* 73, 167–258.
—— (2009) *Topics in Latin Philosophy from the 12th–14th centuries. Collected essays of Sten Ebbesen* II, Farnham and Burlington, VER: Ashgate.
Ebbesen, S. and J. Pinborg (1981) 'Bartholomew of Bruges and his Sophisma on the Nature of Logic'. *CIMAGL* 39, iii–xxvi + 1–80.
—— (1982) 'Gennadios and Western Scholasticism. Radulphus Brito's *ars vetus* in Greek translation', *Classica et Mediaevalia* 33, 263–319.
Erismann, C. (2007) 'Immanent Realism. A reconstruction of an early medieval solution to the problem of universals', *Documenti e studi sulla tradizione filosofica medievale* 18, 211–229.
—— (in press) *L'homme commun. La genèse du réalisme ontologique durant le haut Moyen âge latin*, Paris: Vrin.
Ferejohn, M. (1991) *The Origins of Aristotelian Science*, New Haven: Yale University Press.
Fine, K. (1999) 'Things and Their Parts', *Midwest Studies in Philosophy* 23, 61–74.
Forrest, P. (1986) 'Neither Magic Nor Mereology: a reply to Lewis', *Australasian Journal of Philosophy* 64, 89–91.
—— (1996) 'How Innocent Is Mereology?', *Analysis* 56, 127–31.
Freddoso, A. (1978) 'Abailard on Collective Realism', *Journal of Philosophy* 75, 527–38.
Frege, G. (1966) *Logische Untersuchungen*, Göttingen: Vandenhoeck and Ruprecht.
Gabbay, D. and J. Woods, eds. (2008) *Handbook of the History of Logic*, II *Mediaeval and Renaissance logic*, Amsterdam: Elsevier.
Gadamer, H.G. (1965) *Wahrheit und Methode*, Tübingen: Mohr.
Geach, P. (1962) *Reference and Generality*, Oxford: Blackwell.
—— (1965) 'Assertion', *Philosophical Review* 74, 449–465.
Genequand, C. (1986) *Ibn Rushd's Metaphysics. A translation with introduction of ibn Rushd's commentary on Aristotle's Metaphysics, Book Lām*, Leiden: Brill.
Gockel, M. (2000) 'A Dubious Christological Formula? Leontius of Byzantium and the *anhypostasis-enhypostasis* theory', *Journal of Theological Studies*, new series 51, 515–532.
Goichon, A.-M. (1938) *Lexique de la langue philosophique d'Ibn Sīn… (Avicenne)*, Bruges: Desclée de Brouwer.
Goulet, R. (1994) *Dictionnaire des philosophes antiques* I, Paris: CNRS.
Gray, P.T. R. (1979) *The Defence of Chalcedon in the East (451–553)*, Leiden: Brill.
Green-Pedersen, N.J. (1984) *The Tradition of the Topics in the Middle Ages: the commentaries on Aristotle's and Boethius' 'Topics'*, Munich: Philosophia Verlag.
Grillmeier, A. and Hainthaler, T. (1995) *Christ in Christian Tradition* 2 *(From the Council of Chalcedon (451) to Gregory the Great (590–604)), Part 2 (The Church of Constantinople in the sixth century)*, London and Louisville, KY: Mowbray and Westminster John Knox Press.

Gutas, D. (1988) *Avicenna and the Aristotelian Tradition. Introduction to reading Avicenna's philosophical works*, Leiden, New York, Copenhagen and Cologne: Brill.
Gyekye, K. (1971) 'The Terms "Prima Intentio" and "Secunda Intentio" in Arabic Logic', *Speculum* 46, 32–38.
Hamlyn, D.V., transl. (1968) *Aristotle's 'De Anima', Books II and III (with certain Passages from Book I)*, Oxford: Oxford University Press.
Henry, D.P. (1984) *That Most Subtle Question (Quaestio Subtilissima): the metaphysical bearing of medieval and contemporary linguistic disciplines*, Manchester: Manchester University Press.
—— (1964) 'Ockham, *suppositio*, and Modern Logic', *Notre Dame Journal of Formal Logic* 5, 290–292.
—— (1972) *Medieval Logic and Metaphysics: a modern introduction*, London: Hutchinson University Library.
—— (1991) *Medieval Mereology*, Amsterdam: Gruner (Bochumer Studien zur Philosophie 16).
Hintikka, J. (1962) *Knowledge and Belief: An introduction to the logic of the two notions*, Cornell: Cornell University Press.
Hudson, H. (2006) 'Containing Composition', *Journal of Philosophy* 103, 631–51.
Hughes, G.E. (1989) 'Modal Logic of John Buridan' in *Atti del convegno internazionale di storia della logica. Le teorie della modalità*, ed. G. Corsi, C. Mangione and M. Mugnai, Bologna: CLUEB, 93–111.
Hugonnard-Roche, H. (2002) 'Logique et physique: la théorie aristotélicienne de la science interprétée par Averroès', *Medioevo* 27, 141–164.
Jacobi , K., ed. (1993) *Argumentationstheorie: Scholastische Forschungen zu den logischen und semantischen Regeln korrekten Folgerns*, Leiden: Brill.
Jardine, L. (1983) 'Lorenzo Valla: academic skepticism and the new humanist dialectic' in *The Skeptical Tradition* ed. M. Burnyeat, Berkeley: University of California Press, 253–86.
—— (1988) 'Humanistic Logic' in *The Cambridge History of Renaissance Philosophy*, ed. C.B. Schmitt, Q. Skinner and E. Kessler, Cambridge: Cambridge University Press, 173–98.
Johnston, M. (2006) 'Hylomorphism', *Journal of Philosophy* 103, 652–98.
Jolivet, J. (1996) 'Classifications of the Sciences' in *Encyclopedia of the History of Arabic Science* III, ed. R. Rashed, R. Morelon, London and New York: Routledge, 1017–1019.
Junglas, J.P. (1908) *Leontius von Byzanz. Studien zu seinen Schriften, Quellen und Anschauungen*, Paderborn: F. Schöningh.
Karger, E. (1984) 'Modes of Personal Supposition: the purpose and usefulness of the doctrine within Ockham's logic', *Franciscan Studies* 44, 87–106.
Kessler, E., C.H. Lohr, W. Sparn, eds (1988) *Aristotelismus und Renaissance*, Wiesbaden: Harrassowitz.
King, P. (1982) *Peter Abailard and the Problem of Universals*, unpublished Ph.D. dissertation, Princeton University.
—— (2001) 'Consequence as Inference: mediaeval proof theory 1300–1350' in Yrjönsuuri 2001, 117–45.
—— (2004) 'Metaphysics' in Brower and Guilfoy 2004, 65–125.
Klima, G. (2001), 'Existence and Reference in Medieval Logic' in *New Essays in Free Logic*, ed. A. Hieke and E. Morscher, Dordrecht: Kluwer (Applied Logic Series 23), 197–226.
—— (2003) 'Peter of Spain' in *Blackwell's Companion to Philosophy in the Middle Ages*, ed. J. Gracia and T. Noone, Malden, MA, Oxford, Melbourne and Berlin: Blackwell.
—— (2008) 'The Nominalist Semantics of Ockham and Buridan: a 'rational reconstruction' in Gabbay and Woods 2008, 389–431.

—— (2009) *John Buridan*, Oxford: Oxford University Press.
Kneale, W. and M. Kneale (1962) (1984) *The Development of Logic*, Oxford: Oxford University Press.
Knuuttila, S. (1981) 'Time and Modality in Scholasticism' in *Reforging the Great Chain of Being: Studies of the History of Modal Theories*, ed. S. Knuuttila, Dordrecht: Reidel (Synthese Historical Library 20), 163–257.
—— (2001) 'Necessities in Buridan's Natural Philosophy' in *The Metaphysics and Natural Phliosophy of John Buridan*, ed. J. Thijssen and J. Zupko, Leiden: Brill (Medieval and Early Modern Science 2), 65–76.
—— (2007) 'Trinitarian Fallacies, Identity, and Predication' in *Trinitarian Theology in the Medieval West*, ed. P. Kärkkäinen, Helsinki: Luther-Agricola-Society (Schriften der Luther-Agricola-Gesellschaft 61), 69–87.
—— (2008) 'Medieval Modal Theories and Modal Logic' in Gabbay and Woods 2008, 505–78.
—— (2010) 'Medieval commentators on future contingents in *De interpretatione* 9', *Vivarium* 48, 75–95.
Knuuttila, S. and Hallamaa, O. (1995) 'Roger Roseth and Medieval Deontic Logic', *Logique et analyse* 149, 75–87.
Kretzmann, N. (1982) 'Syncategoremata, Exponibilia, Sophismata' in Kretzmann, Kenny and Pinborg 1982, 211–245.
Kretzmann, N. A. Kenny, and J. Pinborg, eds (1982) *The Cambridge History of Later Medieval Philosophy*, Cambridge: Cambridge University Press.
Kukkonen, T. (2005) '"The Impossible, insofar as it is Possible": ibn Rushd and Jean Buridan on logic and natural theology' in *Logik und Theologie. Das Organon im arabischen und im lateinischen Mittelalter*, ed. D. Perler and U. Rudolph, Leiden: Brill (Studien und Texte zur Geistesgeschichte des Mittelalters 84), 447–68.
Lafleur, C. (1988) *Quatre introductions à la philosophie au XIII^e siècle*, Montreal and Paris: Institut d'études médiévaux and Vrin.
Lang, U.M. (1998) '*Anhypostatos-enhypostatos*: Church Fathers, protestant orthodoxy and Karl Barth', *Journal of Theological Studies* 49, 630–657.
—— (2001) *John Philoponus and the Controversies over Chalcedon in the Sixth Century. a study and translation of the* Arbiter, Leuven: Peeters (Spicilegium sacrum lovaniense. Études et documents 47).
Lebon, J. (1951) 'La christologie du monophysisme syrien' in *Das Konzil von Chalkedon, Geschichte und Gegenwart* I: *Der Glaube von Chalkedon*, ed. A. Grillmeier, A. and H. Bacht, Würzburg: Echter, 425–580.
Leonard, H.S. and N. Goodman (1940) 'The Calculus of Individuals and Its Uses', *Journal of Symbolic Logic* 5, 45–55.
LeRon Schults, F. (1996) 'A Dubious Christological Formula: from Leontius of Byzantium to Karl Barth', *Theological Studies* 57, 431–446.
Leśniewski, S. (1916) *Podstawy ogólnej teoryi mnogosci. I*, Moskow: Prace Polskiego Kola Naukowego w Moskwie, Sekcya matematyczno-przyrodnicza (Eng. trans. by D.I. Barnett: 'Foundations of the General Theory of Sets. I' in S. Leśniewski (1992). *Collected Works*, ed. S.J. Surma, J. Srzednicki, D.I. Barnett and F.V. Rickey, Kluwer I, 129–173).
Lewis, D. (1986a) 'Against Structural Universals', *Australasian Journal of Philosophy* 64, 25–46.
—— (1986b) 'A Comment on Armstrong and Forrest', *Australasian Journal of Philosophy* 64, 92–93.
—— (1991) *Parts of Classes*, Oxford: Blackwell.
—— (1992) 'Armstrong on Combinatorial Possibility', *Australasian Journal of Philosophy* 70, 211–24.
Libera, A. de (1999) *L'Art des généralités. Théories de l'abstraction*, Paris: Aubier.
—— (1989) 'Les sources gréco-arabes de la théorie médiévale de l'analogie de l'être', *Les Études philosophiques* 3–4, 319–345.

—— (2005) 'L'onto-théo-logique de Boèce' in *Les Catégories et leur histoire*, ed. O. Bruun and L. Corti, Paris: Vrin.
Lindberg, D. (1996) *Roger Bacon and the Origins of* Perspectiva *in the Middle Ages. A critical edition and English translation of Bacon's* Perspectiva *with introduction and notes*, Oxford: Oxford University Press.
Loofs, F. (1887) *Leontius von Byzanz und die gleichnamigen Schriftsteller der griechischen Kirche*, Leipzig: J.C. Hinrichs'sche Buchhandlung.
Lowe, E.J. (1999) *The Possibility of Metaphysics: substance, identity, and time*, Oxford: Oxford University Press.
Łukasiewicz, J.(1957) *Aristotle's Syllogistic from the Standpoint of Modern Logic* 2nd edition, Oxford: Oxford University Press.
Maierù, A. (1981) 'Logica aristotelica e teologia trinitaria: Enrico Totting da Oyta' in *Studi sul XIV secolo in memoria di Anneliese Maier*, ed. A. Maierù and A. Paravicini Bagliani, Rome: Edizioni di storia e letteratura (Storia e letteratura 151), 481–512.
—— (1988) 'Logic and Trinitarian Theology: *De modo predicandi ac syllogizandi in Divinis*' in *Meaning and Inference in Medieval Philosophy*, ed. N. Kretzmann, Dordrecht: Kluwer (Synthese Historical Library 32), 247–95.
Marenbon, J. (2000) 'What is Medieval Philosophy?' in J. Marenbon, *Aristotelian Logic, Platonism and the Context of Early Medieval Philosophy in the West*, Aldershot and Burlington, VER: Ashgate.
—— (2007) 'Abelard's Changing Thoughts on Sameness and Difference in Logic and Theology', *American Catholic Philosophical Quarterly* 81, 229–50.
—— (2008) 'Logic before 1100: the Latin tradition', in Gabbay and Woods 2008, 1–63.
Markosian, N. (1988) 'On Ockham's Supposition Theory and Karger's Rule of inference', *Franciscan Studies* 48, 40–52.
—— (2008) 'Restricted Composition', *Contemporary Debates in Metaphysics*, ed. in T. Sider, J. Hawthorne, and D.W. Zimmerman, Oxford: Blackwell.
Marmo, C. (1990) '*Suspicio*: a key word to the significance of Aristotle's *Rhetoric* in thirteenth century scholasticism', *CIMAGL* 60, 145–198.
Marmura, M.E. (1979) 'Avicenna's Chapter on Universals in the *Isagoge* of his *Shifāʾ*' in *Islam: Past Influence and Present Challenge*, ed. A.T. Welch and P. Cachia, Edinburgh: Edinburgh University Press, 34–56.
—— (1980) 'Avicenna on the Division of the Sciences in the *Isagoge* of His *Shifāʾ*', *Journal of the History of Arabic Sciences* 92, 239–251.
—— (2005) *Probing in Islamic Philosophy. Studies in the philosophies of Ibn Sina, al-Ghazali and other major muslim thinkers*, Binghamton, NY: Global Publishing.
Martin, A. (1984) *Grand commentaire de la Métaphysique d'Aristote (Tafsīr mābaʿd aṭ-ṭabīʿa). Livre Lam-Lambda traduit de l'arabe et annoté*, Paris: Les Belles Lettres.
Martin, C.J. (1991) 'The logic of negation', *Phronesis* 36, 277–304.
—— (1997) 'Impossible *positio* as the foundation of metaphysics or, Logic on the Scotist plan?', in *Vestigia, Imagines, Verba: Semiotics in medieval theological texts (XIIIth–XIVth centuries)*, Turnhout: Brepols, 255–277.
—— (2004). 'Logic' in Brower and Guilfoy 2004, 158–99.
—— (1990) 'Bradwardine and the Use of Positio as a Test of Possibility' in *Knowledge and the Sciences in Medieval Philosophy*, ed. S. Knuuttila, R. Työrinoja and S. Ebbesen, Helsinki: Luther-Agricola Society (Publications of Luther-Agricola Society B 19), 574–85.
—— (2003) 'An Amputee is Bipedal: the role of the Categories in the development of Abaelard's theory of possibility' in *La Tradition médiévale des categories (XIIe–XVe siècles)* ed. J. Biard and I. Rosier-Catach, Louvain-la-Neuve, Louvain and Paris: Éditions de l'Institut Supérieur de Philosophie and Peeters (Philosophes médiévaux 45), 225–42.
Mates, B. (1972) 'Individuals and Modality in the Philosophy of Leibniz', *Studia Leibnitiana* 4, 81–118.

Matthews, G. (1964) 'Ockham's Supposition Theory and Modern Logic', *Philosophical Review* 73, 91–99.
—— (1973) '*Suppositio* and Quantification in Ockham', *Noûs* 7, 13–24.
—— (1984) 'A Note on Ockham's Theory of the Modes of Common Personal Supposition', *Franciscan Studies* 44, 81–86.
—— (1997) 'Two Theories of Supposition?' *Topoi* 16 (1), 35–40.
McGinnis, J. and D.C. Reisman, transl. (2007) *Classical Arabic Philosophy: an anthology of sources*, Indianapolis, IND and Cambridge: Hackett Publishing.
McKirakan, R.D. (1992) *Principles and Proofs. Aristotle's theory of demonstrative science*, Princeton: Princeton University Press.
Mignucci, M. (1975) *L'argomentazione dimostrativa in Aristotele. Commento agli Analitici Secondi*, Padua: Antenore.
—— (1989) 'Truth and Modality in Late Antiquity: Boethius on future contingent propositions' in *Atti del convegno Internazionale di Storia della Logica. Le teorie delle modalità*, ed. G. Corsi, C. Mangione and M. Mugnai, Bologna: CLUEB, 47–78.
—— (1998) 'Ammonius' Sea Battle' in Ammonius, *On Aristotle:* On Interpretation *9*, trans. D. Blank, with Boethius, *On Aristotle: On Interpretation 9*, first and second Commentaries, transl. N. Kretzmann, with essays by R. Sorabji, N. Kretzmann and M. Mignucci, London: Duckworth, 53–86.
—— (2000) 'Parts, Quantification and Aristotelian Predication', *The Monist* 83: 3–21.
Moody, E. (1953) *Truth and Consequence in Medieval Logic*: Amsterdam: North-Holland.
Nikitas, D. (1990) = Boethius 1990.
Normore, C. (1990) 'Doxology and the history of philosophy', *Canadian Journal of Philosophy*, Supplementary volume 16, 203–226.
—— (2003) 'Duns Scotus's Modal Theory' in *The Cambridge Companion to Duns Scotus*, ed. T. Williams, Cambridge: Cambridge University Press, 129–160.
—— (2006) 'Ockham's Metaphysics of Parts', *Journal of Philosophy* 103, 737–54.
Nuchelmans, G. (1991) *Dilemmatic Arguments: towards a history of their logic and rhetoric*, Amsterdam: North-Holland.
Oderberg, D.S. ed. (1999). *Form and Matter: themes in contemporary metaphysics*, Oxford: Blackwell.
Otto, S. (1968) *Person und Subsistenz. Die philosophische Anthropologie des Leontios von Byzanz: ein Beitrag zur spätantiken Geistesgeschichte*, Munich: Wilhelm Fink.
Panaccio, C. (2008) 'Restrictionism: a medieval approach revisited' in Rahman, Tulenheimo and Genot 2008, 229–53.
Pinzani, R. (2003) *The Logical Grammar of Abelard*, Dordrecht: Kluwer Academic Publishers (The New Synthese Historical Library 51).
Pluta, O. (2001) 'Buridan's Theory of Identity' in *Metaphysics and natural philosophy of John Buridan*, ed. J.M.M.H. Thijssen and J. Zupko, Leiden: Brill.
Pozzi, L. (1978) *Le* Consequentiae *nella logica medievale*, Padua: Liviana Editrice.
Priest, G. and S. Read (1977) 'The Formalization of Ockham's Theory of Supposition', *Mind* 86, 109–113.
Prior, A.N. (1953) 'The Logic of Negative Terms in Boethius', *Franciscan Studies* 13, 1–6.
Rahman, S., Tulenheimo, T. and Genot, E., eds (2008) *Unity, Truth and the Liar: the modern relevance of medieval solutions to the liar paradox*, Dordrecht: Springer (Logic, Epistemology, and the Unity of Science 8).
Read, S. (1993) 'Formal and Material Consequence, Disjunctive Syllogism and Gamma' in Jacobi 1993, 33–59.
—— (2006) 'On the Properties of Terms', *Stanford Encyclopedia of Philosophy*, URL: http://plato.stanford.edu/entries/medieval-terms/.
—— (2008) 'The Truth Schema and the Liar', in Rahman, Tulenheimo and Genot, 3–17.

—— (2008a) 'Further Thoughts on Tarski's T-Scheme and the Liar' in Rahman, Tulenheimo and Genot 2008, 205–25.
Rescher, N. (1955) 'Axioms for the Part Relation', *Philosophical Studies* 6, 8–11.
Resnick, I.M. (1997) 'Odo of Tournai, the Phoenix and the Problem of Universals', *Journal of the History of Philosophy* 35, 355–374.
Richard, M. (1938) 'Léonce et Pamphile', *Revue des sciences philosophiques et théologiques* 27, 27–52.
Rijk L.M. de (1967) *Logica Modernorum* II.1–2, Assen: Van Gorcum.
Rosier-Catach, I. (2004) *La Parole efficace: signe, rituel, sacré*, Paris: Sevil.
Rorty, R. (1984) 'The Historiography of Philosophy: four genres', in *Philosophy in history: essays on the historiography of philosophy*, ed. R. Rorty, J.B. Schneewind and Q. Skinner, Cambridge: Cambridge University Press.
Sabra, A.I. (1980) 'Avicenna on the Subject Matter of Logic', *Journal of Philosophy*, 77, 746–764.
Sanford, D.H. (1993) 'The Problem of the Many, Many Composition Questions, and Naïve Mereology', *Noûs* 27, 219–28
Schlossmann, S. (1906) *Persona und* prosôpon *im Recht und im christlichen Dogma*, Kiel: Lipsius and Tischer.
Schurr, V. (1935) *Die Trinitätslehre des Boethius im Lichte der 'skythischen Kontroversen'*. Paderborn: F. Schöningh.
Shank, M.H. (1988) *'Unless You Believe, You Shall Not Understand.' Logic, university, and society in late medieval Vienna*, Princeton: Princeton University Press.
Sider, T. (2008). 'Temporal Parts' in T. Sider, J. Hawthorne, and D.W. Zimmerman (eds.) *Contemporary Debates in Metaphysics*, Oxford: Blackwell Publishing.
—— (2001) *Four-Dimensionalism: an ontology of persistence and time*, Oxford: The Clarendon Press.
Simons, P. (1987) *Parts: a study in ontology*, Oxford: Oxford University Press.
—— (2006) 'Real Wholes, Real Parts: Mereology Without Algebra', *Journal of Philosophy* 103: 597–613.
Simons, P. and C.W. Dement (1996) 'Aspects of the Mereology of Artifacts' in *Formal Ontology*, ed. R. Poli and P. Simons, Dordrecht: Kluwer.
Skinner, Q. (1969) 'Meaning and Understanding in the History of Ideas', *History and Theory* 8, 3–53.
Sleigh, R.C. (1990) *Leibniz and Arnauld: a commentary on their correspondence*, New Haven and London: Yale University Press.
Smiley, T.J. (1973) 'What Is a Syllogism?', *Journal of Philosophical Logic* 2, 136–154.
Spade, P.V. (1976) 'Priority of Analysis and the Predicates of 'O'-Form Sentences', *Franciscan Studies* 36, 263–270.
—— (1998) 'The Logic of the Categorical: the medieval theory of descent and ascent', in *Meaning and inference in medieval philosophy: studies in memory of Jan Pinborg*, ed. N. Kretzman, Dordrecht: Kluwer.
—— (2000) 'Why Don't Medieval Logicians Ever Tell Us What They're Doing? *Or*, What is this, a conspiracy?', URL: www.pvspade.com/Logic/docs/Conspiracy.pdf.
—— (2005) 'The Problem of Universals and Wyclif's Alleged 'Ultrarealism'', *Vivarium* 43, 111–23.
Stead, G.C. (1994) *Philosophy in Christian Antiquity*, Cambridge: Cambridge University Press.
Strawson, P.F. (1974) *Subject and Predicate in Logic and Grammar*, London: Methuen.
Street, T. (2002) 'An Outline of Avicenna's Syllogistic', *Archiv für Geschichte der Philosophie* 84, 129–160.
Stump, E., transl. (1978) *Boethius's De topicis differentiis*, Ithaca: Cornell University Press.
—— (1982) 'Topics: their development and absorption into consequences' in Kretzmann, Kenny and Pinborg 1982, 273–99.

Swiniarski, J. (1970) 'A New Presentation of Ockham's Theory of Supposition with an Evaluation of some Contemporary Criticisms', *Franciscan Studies* 30, 181–217.
Synan, E.A. (1982) *The Works of Richard Campsall* II, Toronto: Pontifical Institute of Mediaeval Studies.
Thom, P. (1996) *The Logic of Essentialism: an interpretation of Aristotle's modal syllogistic*, Dordrecht: Kluwer (The New Synthese Historical Library 43).
—— (2003) *Medieval Modal Systems*, Aldershot: Ashgate.
—— (2008) 'Logic and Metaphysics in Avicenna's Modal Syllogistic', in *The Unity of Science in the Arabic Tradition. Science, logic and epistemology and their interactions*, ed. S. Rahman, T. Street, H. Tahiri, Berlin: Springer, 361–376.
—— (1981) *The Syllogism*, Munich: Philosophia.
—— (2000) *Making Sense: a theory of interpretation*, Lanham, MD and Oxford: Rowman and Littlefield.
—— (2007) *Logic and Ontology in the Syllogistic of Robert Kilwardby*, Leiden: Brill.
Treiger, A. (2010) 'Avicenna's Notion of Transcendental Modulation of Existence (*taškīk al-wuǧūd, analogia entis*) and Its Greek and Arabic Sources', *Documenti e studi sulla tradizione filosofica medievale* 21, 165–198.
Trentman, J. (1966) 'Lesniewski's Ontology and Some Medieval Logicians', *Notre Dame Journal of Formal Logic* 7, 361–363.
Tweedale, M.M. (1976). *Abailard on Universals*, Amsterdam: North Holland.
Uckelman, S. (2009) *Modalities in Medieval Logic*, Institute for Logic, Language and Computation Dissertation Series DS-2009–04, University of Amsterdam.
Valente, L. (2007) *Logique et théologie: les écoles parisiennes entre 1150 et 1220*, Vrin: Paris.
Van Cleve, J. (2008) 'The Moon and Sixpence: a defense of mereological universalism' in T. Sider, J. Hawthorne, and D.W. Zimmerman (eds.) *Contemporary Debates in Metaphysics*, Oxford: Blackwell.
Van Inwagen, P .(2006) 'Can Mereological Sums Change Their Parts?', *Journal of Philosophy* 103, 614–30.
—— (1987) 'When Are Objects Parts?', *Philosophical Perspectives* 1, 21–47.
Van Rijen, J. (1989) *Aspects of Aristotle's Logic of Modalities*, Dordrecht: Kluwer (Synthese Historical Library 35).
Varzi, A. (2003) 'Mereology', *The Stanford Encyclopedia of Philosophy* (Winter 2006 Edition), URL = <http://plato.stanford.edu/archives/win2006/entries/mereology/> (first archived 2003).
Wittgenstein, Ludwig (1993), *Philosophical Occasions*, ed. J. Klagge and A. Nordmann, Indianapolis: Hackett.
Yrjönsuuri, M., ed. (2001) *Medieval Formal Logic: obligations, insolubles and consequences*, Dordrecht: Kluwer (The New Synthese Historical Library 49).
Zupko, J. (2003) *John Buridan: portrait of a fourteenth-century arts master*, Notre Dame, IN: University of Notre Dame Press.

INDEXES

The two articles discussing Arabic material use different systems of transliteration (Bertolacci the German one, Di Giovanni that more common in Anglophone countries). For the Index, we have standardized to the Anglophone system. In the Index of Names, medieval authors are alphabetized according to their Christian names.

Subject Index

Index of Names