

# 1 The Legacy of Ancient Logic in the Middle Ages

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## I.1 INTRODUCTION

Both the Latin and Arabic medieval logical traditions drew heavily on materials and ideas produced in Greek Antiquity. Among other things, they inherited from late ancient commentators on Aristotle the very notion of logic as a discipline, a set of canonical texts organised in accordance with a stable division of logical contents, an exegetical method, an epistemological orientation of logic in which the theory of demonstrative knowledge is the culmination of logical teaching, and a defined pedagogical and scientific status within the philosophical curriculum, one in which logic is both a necessary starting point and an instrument for other sciences (see Sorabji 2004, 31ff.).

Traditionally, historians of logic identify two main ancient logical traditions: one stemming from Aristotle's writings (fourth century BC), the other from the Stoics. As we know it today, Aristotle's logic, the *Organon*, contains the *Categories*, which deals with the ten types of predicates; the *Perihermeneias* (*On Interpretation*), devoted to statements and their properties; and then the treatises about argumentation: syllogistic (*Prior Analytics*), demonstrative proof (*Posterior Analytics*), topical and dialectical argumentation (*Topics*), and fallacious arguments (*Sophistical Refutations*). To these, the *Rhetoric* and *Poetics* are sometimes added in a "long *Organon*", which was standard in Arabic logic (see Black 1990) and was conveyed to the Latin world especially through Al-Farabi's influential *Division of the Sciences*. The long version was adopted by Thomas

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Aquinas in the thirteenth century, though never effective in practice (see Marmo 1990; Brumberg-Chaumont 2013a).

According to ancient testimonies, Stoic logic was divided into dialectic, concerned with dialogical argumentation, and its “counterpart”, rhetoric, a continuous discourse governed by the quest for truth in public context; two other parts are also mentioned, one about definitions, the other about the criteria for true representations. Dialectic dealt, on the one hand, with “signifying expressions”, in particular the parts of speech (the so-called “Stoic grammar”) and linguistic ambiguity and, on the other hand, with the “meanings”, especially propositions and their structure, classifications of propositions, and propositional syllogistic.

The two traditions are nevertheless not on a par from a historical point of view. Aristotle’s numerous logical writings described in ancient lists had already almost been entirely lost in the next generation after Aristotle and Theophrastus. But some ‘esoteric’ texts, used inside Aristotle’s school, were preserved and edited by Andronicus of Rhodes (first century BC): these form what is today known as the *Organon*. By contrast, the Stoics’ massive logical production, as testified, for instance, in Chrysippus’ ancient list of works, were not only already lost in Late Antiquity, but furthermore they have never been recovered. Even the main texts through which their theories are now reconstructed, namely those of Diogenes Laertius and Sextus Empiricus, were not transmitted to the Middle Ages (see Colish 1990 and Ebbesen 2004). As a result, only a very indirect influence can be perceived in later authors, through authors who were themselves influenced by Stoicism in Antiquity and who were read in the Middle Ages.

The study of the legacy of ancient logic in the Middle Ages can be roughly seen as an inquiry into the Latin and Arabic translations of Aristotle’s *Organon* and its companions.<sup>1</sup> It had a vast influence in the Middle Ages, where hundreds of commentaries were

<sup>1</sup> For a justification of this choice, see my conclusions (Section 1.8).

produced and kept on being produced till the Early Modern period. But this does not entail a simple and linear history. Aristotle did not write an “Organon” as the textbook of his “logic”, a word he never used in the modern sense. Theophrastus, Aristotle’s immediate successor in the Lyceum, had already introduced important logical novelties into his master’s teaching. Various aspects of what was included in “Aristotelian logic” in Late Antiquity and then transmitted to the Middle Ages stem from Stoic logic, but also from medio-Platonic (Apuleius), Galenic, Neoplatonic (Plotinus, Porphyry, Themistius), and Roman (Cicero, Boethius) contexts (see Marenbon 2007b), or even from technical ancient grammar, such as the famous distinction between categorematic (subject and predicate) and syncategorematic terms (see Rosier-Catach 2003b). As an illustration of the most important extensions of Aristotle’s logic common both to Latin and Arabic legacies, one can mention the addition to Aristotle’s categorical syllogistic of hypothetical syllogistic, or the notion of axiomatic topics, stemming from Themistius.

This legacy was not transmitted and circulated in the Middle Ages in one block. The *Posterior Analytics* and the *Prior Analytics*, after chapter 7 of the first book, were not studied by the early Syriac<sup>2</sup> and Arabic commentators before the tenth century, even if they were available in translation. The Latin translation of the *Posterior Analytics* dates to the twelfth century, but it was not really commented on before the 1230s. The *Topics* studied in the early Latin Middle Ages were those of Cicero, through Boethius’ commentaries and textbooks, and not Aristotle’s. A history of translations and transmissions thus needs to be complemented by a careful study of circulations and appropriations, where the different versions of the *Organon* are identified, taking into account the texts that were considered as a complement to or substitute for Aristotle’s texts

<sup>2</sup> Syriac was a ‘learned’ literary language in much of the Middle East and other parts of Asia from the fourth to the tenth centuries. Attention is paid here to the Syriac texts and translations insofar as they paved the way for the later Arabic textual tradition.

in the Middle Ages, as well as the various intellectual frameworks and filters through which logical theories were understood.<sup>3</sup>

As a consequence, we focus on texts that belong properly to what the Middle Ages inherited from Antiquity, in order to reconstruct the state of logic in Late Antiquity that was actually transmitted to the Middle Ages – what Sten Ebbesen has labelled a ‘Logical Late Ancient Standard’, to be complemented point by point by a ‘Grammatical Late Ancient Standard’ (see Ebbesen 2007). A portion of these texts are now lost in their Greek versions, but were directly or indirectly available to medieval logicians. The exegetical context provided, on the one hand, by the Alexandrian school, for the Arabic world (see D’Ancona 2005), and, on the other hand, by Boethius’ project (see Ebbesen 1990) played a crucial role here.

In what follows, the five first sections focus on the texts and doctrines indirectly and directly transmitted. A last section traces the stages of circulation of this legacy, as well as the various conceptions of logic related to these successive versions of the logical corpus; this is done by comparing Eastern and Western contexts.

## I.2 ARISTOTLE: LATIN TRANSLATIONS FROM GREEK AND ARABIC, ARABIC TRANSLATIONS FROM GREEK AND SYRIAC

The main focus of this chapter will be on Aristotle (fourth century BC) and the ensuing tradition, since his logical treatises were the textbooks used for logical instruction, both in Antiquity and in the Middle Ages, and his works have been entirely transmitted to the medieval period both in the East and the West.<sup>4</sup>

<sup>3</sup> See the contributions gathered in Brumberg-Chaumont 2013b.

<sup>4</sup> Here are the main bibliographical references on which the present synthesis was based. For the various treatises of the Arabic *Organon*, see Hugonnard-Roche and Elamrani-Jamal 1989, and Aouad 2003. For the Arabic tradition, apart from Peters 1968, Madkour 1969, Badawi 1987, Gutas 1998, and, recently, El-Rouayheb 2011, much information can be gathered from the introduction to Zimmerman 1981 or from Lameer 1994. On the *Categories*, see Georr 1948; on *Poetics*, Tkatsch 1928–1932; on *Rhetoric*, Aouad 2002. The Syriac tradition of the *Organon* is extensively covered in Hugonnard-Roche 2004. For the Latin tradition the most

The modern critical editions offer a stable set of texts that give a fairly good idea of what was actually read in the Middle Ages: the so-called *Logica Vetus*<sup>5</sup> and *Logica Nova* edited in the *Aristoteles Latinus* series, and the Arabic *Organon* as embodied in the famous eleventh-century Arabic manuscript Parisinus 2346 (Badawi 1948–1952).<sup>6</sup> It contains a medieval ‘critical’ edition prepared by Al-Hassan ibn-Suwar (d. 1017) in Baghdad, i.e. a revised version of the pre-existent Arabic translations, with marginal notes where the texts used for the editions are listed and described, as well as alternative translations and known Greek and Arabic commentaries (see Hugonnard-Roche 1992).

Despite the existence of stable medieval editions, one must bear in mind that the canonical versions, when they existed,<sup>7</sup> were not necessarily those read by medieval commentators, or, at least, not the only ones: for example, Abelard had access to the *Prior Analytics* in a poorly circulated version of Boethius’ translation, not in the far more popular Florentine version; Averroes quoted the lemmata of an otherwise unknown Arabic version of the *Posterior Analytics* in his (recently recovered) Long Commentary book 1, different from the one made by Abu Bisr Matta (d. 940), preserved in the Parisinus manuscript. The same can be said of Avicenna on the *Poetics*. Another difficulty is chronological: as we shall see later on (Section 1.6), these translations were not all produced simultaneously, made accessible,

important information can be gathered in each introduction to the edition of the Latin text of the *Organon* in the *Aristoteles Latinus* series. For the Latin tradition of the *Sophistici Elenchi*, see Ebbesen 1981b and 2008. For the *Topics*, see Green-Pedersen 1984 and Biard and Zini Fosca 2009. For the *Rhetoric*, see Dahan and Rosier-Catach 1998; for *On Interpretation*, Kneepkens and Braakhuis 2003 and the special issue of *Vivarium* 48, 2010, ed. John Marenbon and Margaret Cameron (which is also concerned with the *Prior Analytics*); for the *Categories*, Newton 2008 – also interested in the Arabic tradition, Biard and Rosier-Catach 2003 and Corti and Bruun 2005; for the *Posterior Analytics*, see Corbini 2006 and De Haas et al. 2011. For the three traditions, see Burnett 2003.

<sup>5</sup> See Section 1.7 below for a critical discussion of this notion, and Chapter 8 of this volume on the *Logica Vetus*.

<sup>6</sup> See also Chapter 2, ‘Arabic Logic up to Avicenna’.

<sup>7</sup> See the problems raised below by the Latin translations of the *Categories*.

circulated, commented upon or used as a basic text in the philosophical curriculum.

The *Categories* was translated five times into Syriac: one anonymous though previously attributed to Sergius (d. 536); one unpublished, by Jacob of Edessa (d. 708); one published, by George of the Arabs (d. 724); one lost, by an author named Jonas the Monk (unidentified); and another one, also lost, by the physician Hunayn ibn Ishaq (d. 873) – according to Ibn-Suwar's marginal notes. There is one Arabic translation by Hunayn's son, Ishaq ibn Hunayn (d. 910), from the lost Syriac version of his father: its revised version appears in the Parisinus manuscript. The marginal notes of the Parisinus manuscript of the *Categories* have been edited in Georr (1948). The text of the *Categories* was first translated into Latin by Marius Victorinus (fourth century AD) according to Cassiodorus. Boethius offered a translation in the sixth century (a few manuscripts are preserved, the first one from the ninth century). Another version was made from the Boethian text: this 'composite translation' was copied from the ninth century (few manuscripts preserved), but it was afterwards corrected and 're-contaminated' with the Boethian translation found in earlier manuscripts. It is this unstable 'contaminated composite' version that actually circulated in the Middle Ages in more than 300 manuscripts. The *Aristoteles Latinus* editors have reconstructed Boethius' text and the 'uncontaminated' text of the composite translation, but they did not edit the standard version because of its instability. In 1266, William of Moerbeke produced a new translation that was always circulated together with Simplicius' commentary that he also translated into Latin. It was rarely read (preserved in fewer than twenty manuscripts).

*On Interpretation* was translated into Syriac three times, once probably by Probus (sixth century AD), with a modern edition; a second one by George of the Arabs (d. 724), also edited; and a third lost one, once again attributed to Hunayn ibn Ishaq (d. 873). The Parisinus manuscript contains the Arabic translation from Ishaq ibn Hunayn, probably made, once again, from the Syriac version of his father's,

with additions from previous copyists, a version of the text that corresponds to the one commented upon by Al-Farabi in his Long Commentary. The marginal glosses of the Parisinus manuscript have not been edited so far. *On Interpretation* was translated into Latin by Boethius (more than 350 manuscripts preserved, the oldest from the ninth century). The new translation made by William of Moerbeke by the time he also translated Ammonius' commentary (1268) is preserved only in four manuscripts.

Several currently lost Syriac translations of the *Topics* were made, especially one attributed to Athanasius of Balad (d. 686) and one to Hunayn ibn Ishaq. Three Arabic translations were made, one by Timotheus I (d. 823), lost, and one by Yahya ibn Adi (d. 974), also lost. The Arabic text contained in the Parisinus manuscript is by Abu Utman al-Dimasqi (d. 920) – books 1 to 7, directly from the Greek – and by his contemporary Ibrahim ibn Abd Allah (book 8) from the lost Syriac translation of Hunayn's. The *Topics* were translated into Latin three times, but by far the most read was the version made by Boethius and preserved in more than 250 manuscripts, the earliest from the twelfth century, most from the thirteenth century.

The *Prior Analytics* was first translated into Syriac, probably from Probus, but only up to chapter 7 of book 1. A complete translation was made by George of the Arabs. Several other Syriac translations, all of them lost, are mentioned in the marginal glosses of the Parisinus manuscript (edited by Badawi), among them one by Hunayn ibn Ishaq completed by his son Ishaq ibn Hunayn. The *Prior Analytics* was given its first Arabic translation by Yahya ibn al-Bitriq in the Kindian circle, known only from one quotation. The Arabic translation contained in the Parisinus manuscript was authored by Tadari ibn Basil (first half of the ninth century). Three other translations were made, all of them now lost. On the Latin side, Boethius' translation of the *Prior Analytics* as it first appeared in a twelfth-century codex is known in two versions, sometimes distinct, sometimes contaminated with each other in manuscripts, but only the 'Florentine' one was widely circulated (more than 250 manuscripts

preserved). Another anonymous translation was produced in the twelfth century (two manuscripts still extant). The Boethian translation was not revised by William of Moerbeke and survived far into the Renaissance. The three Latin texts are edited in the *Aristoteles Latinus* collection.

The *Posterior Analytics* was probably translated entirely into Syriac by Athanase of Balad (text now lost), partially by Hunayn ibn Ishaq, and then again in its entirety by his son, but the text is also lost. From it, the Arabic translation by Abu Bisr Matta (d. 940) was produced, preserved in the Parisinus manuscript. Another anonymous translation is known from the lemmata quoted by Averroes in his long commentary on *Posterior Analytics* book 1, a text that might be related to Philoponus' commentary. The Latin translation made by Gerard of Cremona in the twelfth century was based upon the two Arabic translations. It did not enjoy much circulation (nine complete manuscripts still exist), nor did another translation from the Greek, the 'John' version made in the twelfth century (two manuscripts). The most popular Latin translation (from the Greek) was made by James of Venice in the twelfth century (more than 250 manuscripts preserved). It was revised in the thirteenth century by William of Moerbeke (six manuscripts preserved), but never superseded. Boethius' translation, if it ever existed, remains unknown.

No less than five Syriac translations of the *Sophistici Elenchi* are mentioned in the records, all of them lost, as well as three lost Arabic translations. The Parisinus manuscript contains three different Arabic translations of the text. The marginal notes of the Parisinus manuscripts have been edited together with the three texts. The treatise was translated into Latin by Boethius, which became the canonical version in the Middle Ages. It has been preserved in 300 manuscripts, a few from the twelfth century, most of them from the thirteenth and fourteenth centuries. Another translation was made in the twelfth century by James of Venice, known by fragments in ten manuscripts. As for the new translation made by William of

Moerbeke around 1269, it exists in one manuscript and remained entirely unknown even in the Middle Ages except to Giles of Rome.

There was at least one lost Syriac version of Aristotle's *Rhetoric*. The only Arabic translation preserved in the Parisinus manuscript is anonymous; it is probably an early translation made from the Syriac. This text has been edited (Lyons 1982). Herman the German made a Latin translation from various Arabic versions before 1256, preserved in two manuscripts, also containing translations of glosses from Arabic commentators. It was known to Giles of Rome, and has so far not received a critical edition. The *Rhetoric* was also translated from the Greek by an anonymous author in the middle of the thirteenth century, an incomplete text almost unknown in the Middle Ages (four manuscripts preserved). William of Moerbeke's translation, made in 1270, is extant in one hundred manuscripts. The two Latin translations have been edited in *Aristoteles Latinus*.

The existence of ancient Syriac translations of the *Poetics* is not certain, but quite possibly there was a translation by Ishaq ibn Hunayn (whose text is now lost). The Arabic translation by Abu Bisr Matta (d. 940) is preserved in the Parisinus manuscript. Another Arabic translation was made by Yahya ibn Adi (text now lost), which was used by Avicenna in the part of the *Shifa* devoted to *Poetics*. Aristotle's text was translated into Latin only in 1278 by William of Moerbeke, a translation preserved in two manuscripts that remained almost unknown. The knowledge of the treatise that Latin medieval authors had was essentially gathered through Herman the German's Latin translation of Averroes' *Poetria* (a paraphrased commentary on Aristotle) made in 1256, preserved in twenty-six manuscripts.

### 1.3 OTHER ANCIENT GREEK LOGICIANS<sup>8</sup>

Plato (fifth century BC) is mentioned in histories of logic for his dialectical method. Yet his status as a logician in ancient and medieval periods is unsure: Aristotle's logic is generally seen as a reflexive

<sup>8</sup> For Aristotle and commentators on Aristotle, see Sections 1.5 and 1.6.

and systematic re-elaboration of elements already present in Plato's dialogues, especially syllogisms, so that the relationship between Aristotelian logic and Platonic dialectic is presented sometimes as overlapping, sometimes as hierarchical (see Hadot 1990). Although the role and influence of Plato's philosophy for medieval philosophy is beyond doubt, there was only an extremely limited direct transmission of his texts in the Middle Ages.

Though entirely lost today, Theophrastus' logical works<sup>9</sup> (fourth century BC) were associated with the rediscovery and edition of Aristotle's treatises by Andronicus of Rhodes. They were known in Antiquity, commented upon by Galen (second century AD) according to his own list of works, Alexander (second–third century AD), and Porphyry (third century AD) according to Boethius (sixth century AD). He is very often referred to in Antiquity and consequently influenced medieval logic significantly. Here are some of his main innovations: the addition of five extra modes in the first figure, an alternative justification for the conversion of universal negative propositions, the rule of the mode of the conclusion following that of the minor premise in mixed syllogisms, the addition of 'hypothetical syllogism' to what will later be called the 'categorical syllogism' of Aristotle, the notion of "prosleptic" syllogisms, the idea of "indefinite propositions", a theory of modalities. All these elements are to be encountered in authors known in the Middle Ages: Apuleius (second century AD), Alexander of Aphrodisias and Themistius (fourth century AD), Ammonius (fifth century AD), Philoponus (sixth century AD), Boethius.

The main logicians of the "Dialectical school", sometimes distinguished from the "Megaric school", are Diodorus Cronus (fourth–third century BC) and Philo the logician (fourth–third century BC). No work is attributed to Diodorus in ancient records, but his logical ideas are well known and discussed, together with those of Philo,

<sup>9</sup> Recent scholarship has listed for logic more than thirty-five titles relying on ancient testimonies; the most quoted works are those on categories, affirmation and denial, analytics, and topics; see Fortenbaugh et al. 1993 and Huby 2007.