KINDS OF ARGUMENT

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1 Introduction

The central methodology in western philosophy from the ancient Greeks until the present day is argumentation. Faced with someone who doesn't hold the same philosophical views as you do, the most expedient way to "convert" them is to give them a good argument for doing so. This emphasis on argumentation falls out of the intrinsically dialectic and multi-agent nature of philosophy in the Greek academic and public spheres, where philosophy, politics, and rhetoric were closely entwined. Philosophy was not merely a single person sitting at home in his arm chair but also many people speaking to and interacting with many other people, with opposing views and positions. Thus, a good philosopher was one that was able to convince others of his views, on the best and purest of grounds. (The close relationship between the study of rhetoric and the study of philosophy in ancient Greece is a testament of this.) What counts as the best grounds for persuasion becomes a matter of what argumentative procedures are best, and this itself is a question of what are the best types of arguments, or which kinds of arguments are better than others. What counts as a good argument depends on the context: If all that you care about is persuading your opponent of your views, by any means possible, then you might have more argumentative types at your disposal than if your goal is providing firm epistemological foundations for knowledge. Similarly, if all you care about is winning a debate, you will be able to make use of types of arguments that are not appropriate to use if you're engaged in a cooperative effort directed at truth.

Aristotle discusses all these matters in a number of works, including the *Prior* and *Posterior Analytics*, which discuss syllogisms and syllogistic reasoning (see §3.1 below); the *Topics*, which discusses non-syllogistic reasoning (see §3.2); and the *Sophistical Refutations*, which focuses on the merely persuasive aspects of argumentation (see §2.3). Some of these texts were transmitted into Latin via Boethius's translations from the early 6th century, while others were introduced in the mid-12th century either through the rediscovery of lost translations by Boethius or through new translations by James of Venice (Dod 1982). These texts provided the foundation for philosophical method in western Europe in the Middle Ages.

As a result, in this chapter we will constantly be referring back to the authority of Aristotle, just as medieval philosophers and logicians did. His distinctions provide us with the means for constructing useful typologies of arguments, and we will use these to guide our tour of the kinds of arguments that occur in medieval philosophy.

Before we begin the tour, it is important to note that we will not be establishing a single typology that exhaustively covers all kinds of arguments. Instead, it is more fruitful to look at overlapping typologies, such that a single argument type can be described differently according to the focus that a certain typology picks out. We consider three typologies, each of which has a different focus or picks out a different relevant characteristic of the argument:

1. The outcome of the argument (§2)
2. The form of the argument (§3)
3. The goal or purpose of the argument (§4)

Additionally, in this chapter, we focus on a relatively narrow period in medieval philosophy, specifically the 13th and 14th centuries. This is not because arguments were not used in other periods (quite the contrary, given what we noted above) but rather because these two centuries were the high period of logic in the Middle Ages. Because we are interested in the types of arguments used in medieval philosophy, as opposed to the specific ways in which they were employed, we concentrate on the theoretical development of argumentation, and it is in the 13th and 14th centuries that we find the most interesting and explicit discussions of the types and properties of arguments, their role and purpose, and their correct and incorrect deployment.

2 Arguments According to Their Outcome

The first typology we take up comes directly from Aristotle, who in *Topics* I.1 divides arguments into three types: demonstrative, dialectical, and sophistical. Medieval authors picked up on this tripartite division and adopted it. As William of Sherwood explains in his *Introduction to Logic* (c. 1250):

> A demonstrative syllogism[1] is one that produces scientific knowledge on the basis of necessary [premisses] and the most certain reasons for the conclusion. A dialectical syllogism, however, is one that produces opinion on the basis of probable [premisses]. Finally, a sophistical syllogism is one that either syllogizes on the basis of seemingly probable [premisses] or seemingly syllogizes on the basis of probable [premisses]; in either case it is strictly aimed at glory or victory (1966: 69).

Roger Bacon in his *Art and Science of Logic* (mid-13th century) distinguishes these three types of arguments on the basis of the ways in which the premises of an argument are said to cause the conclusion. There are three sorts of causes: (a) a cause of implying a conclusion only, (b) a cause of implying and proving it, and (c) a cause of implying and proving it and of its being (2009: 305). In a dialectical argument, the premises are the cause of both implying and proving the conclusion; in a demonstrative argument, the premises are also the cause of the being of the conclusion. In sophistical arguments, on the other hand, the premises are not causally related to the conclusion in any way except merely apparently.[2]

This is a typology which divides arguments on the basis of their outcomes, or what it is that the argument proves. Demonstrative arguments produce certain, scientific knowledge. Dialectical arguments are not as strong as demonstrative arguments, but nevertheless the conclusions arising from them have a degree of stability; they are, for the most part, going to be reliable. Sophistical arguments, on the other hand, because they are based on premises which are only seemingly probable, or which argue in a way which is only seemingly correct but not actually, produce rubbish. They are not a reliable guide to the truth; instead, they are used in circumstances where what is important is merely to win, or, as Bacon puts it, when the arguer "intends to acquire glory and apparent wisdom for himself, [and] he also intends victory over a respondent" (2009: 376).

2.1 Demonstrative Arguments

A demonstrative argument is one which produces knowledge; they are the topic of Aristotle's *Posterior Analytics*, which discusses how scientific knowledge and discovery is possible. For Aristotle, scientific knowledge is knowledge "[of] the cause why the thing is, that it is the cause of this, and that this cannot be otherwise" (*APo*. I.2). Despite the fact that William of Sherwood mentions demonstrative arguments in his text, he does not go on to discuss them further, focusing on dialectical/probable and sophistical argumentation instead. Bacon discusses demonstrative arguments and identifies two types: demonstrations *quia* "because" and demonstrations *propter quid* "because of which." The latter are the most basic. A demonstration *propter quid* is "that by which an effect is made known through a cause," and (quoting Aristotle) "from things that are primary, true, and immediate, and are prior to, better known than, and the causes of a conclusion"; for this sort of demonstration, the premises must be not only true but also necessary (2009: 304). A demonstration *quia*, on the other hand, either reasons from effect back to cause or from a remote or non-proximate cause to effect (2009: 323). An example of the first is when it is argued that "the planets are near because they do not twinkle" or "a triangle is a plane figure [because] it has three angles equal to two right angles" (2009: 323). An example of the second is "A wall does not breathe because it is not an animal"; in this "not being an animal" is a remote cause of the wall's not breathing. We also see this distinction in John Buridan's early 14th century *Summaries of Dialectic* (2001: 8.2, 8.8, 8.9), and again in the 15th century when Gaetanus of Thiene (1387–1465) explains the relationship between different ways in which we use the phrase "to know" and different types of arguments. Gaetanus distinguishes three gradations of knowledge properly speaking, the weakest being "a mental grasp of anything true, and necessary without a danger that the opposite be the case," the next being "a mental grasp of anything by means of a demonstration, be it *demonstratio quia* or *demonstratio propter quid*, be it universal or particular," and the most proper type of knowledge being "a mental grasp of anything acquired by the most powerful demonstration, which is in some way different from a *demonstratio quia*" (Boh 1985: 91). This shows that demonstrations *propter quid* are stronger than *demonstrations quia*.

As a class, demonstrative arguments are the "gold standard". They provide us with utterly reliable conclusions that cannot be disputed. They are the only reliable means of scientific reasoning. In other contexts, where we cannot always be assured of necessarily true and readily evident premises, we must rely on dialectical arguments.

2.2 Dialectical Arguments

Dialectical arguments are weaker than demonstrative ones, in that they lead to conclusions which are merely probable, rather than necessarily true; the weakness of the argument stems from the weakness of the premises, and not from any defect in the type of argument itself. As Bacon says:

> A *dialectical syllogism* arises from probable propositions because it does not seek necessary things, but things that have the appearance of truth . . . The *probable* is what seems [to be true] to all or to many or to the most notable. What is *probable to all* is that about which neither the crowd nor the wise hold a contrary opinion. What is *probable to many* is that about which the wise hold a contrary opinion (2009: 325).

On this view, a dialectical argument can either be a syllogism whose premises are merely probable rather than necessarily true or it can be a non-syllogistic argument whose justification lies in something other than the form of the argument. Both Bacon and Sherwood focus on the non-syllogistic arguments which derive their justification from something other than the form. Sherwood says that a dialectical argument "is based on probable [premisses], but it derives its probability from [dialectical] grounds" (1966: 69–70). The "grounds" that he refers to are the Latin *loci* (sing. *locus*), the translation of Aristotle's τοποι (sing. τοπος), the subject of the *Topics*. We return to topical arguments below in §3.2.1, and also in the discussion of disputations (§4).

2.3 Sophistical Arguments

Sophistical arguments are distinguished from the preceding two types in that they are employed not to obtain actual truth but rather merely apparent truth; as Sherwood says, "the end for which the sophist strives is apparent wisdom; sophistical disputation, therefore, is that by means of which a person can appear wise" (1966: 133), without actually being wise. There are many ways in which an argument can appear to lead to truth without actually doing so, and it is no wonder that Aristotle devoted an entire book to showing how to recognize sophistical reasoning (the *Sophistical Refutations*). The *Sophistical Refutations* were not translated by Boethius but were newly translated in the middle of the 12th century by James of Venice (Dod 1982), and the introduction of this text into the medieval logical canon was both directly and indirectly responsible for

many of the most novel developments in logic—not only during the Middle Ages but at any time. The task of teaching fallacies and how to recognize fallacious or sophistical reasoning naturally led to the study of paradoxes — *sophismata* and *insolubilia* — and the influence of the different types of disputations which Aristotle defines in *Sophistical Refutations* I.2 is manifest in the development in the 13th and 14th centuries of the uniquely medieval type of disputation called *obligationes* (about which see §4).

Bacon gives a delightful explanation of sophistical arguments, saying that a sophistical argument "gives the appearance of being [a] dialectical syllogism, but it is not, just as in the case of things: objects made of litharge and tin look like silver things, and objects made of brass and things painted with bull-bile seem to be golden" (2009: 370). Sophistical arguments come in many kinds; Bacon mentions fallacies, sophistical topics, sophistical syllogisms, paralogical syllogisms, and both truth and apparent paraelenchus and elenchus (2009: 377). Robert Kilwardby in the chapter on logic in his *On the Order of the Sciences* (c. 1245–1250) says that there are many different ways a sophistical argument can arise, "for either it does what it should not do, or it does not do what it should" (1988: 272). An example of the former is when "it introduces a false premise or conclusion to produce a wrong state of mind, something reasoning should not do" (1988: 272). Kilwardby distinguishes three ways in which this can happen, again following Aristotle (*Topics* I.1): (i) The argument can err in form (that is, be invalid); (ii) it can err in matter (that is, it is unsound or one of the premises is only apparently readily believable but not actually readily believable); or (iii) it can err in both form and matter (1988: 272).

A sophistical argument, then, is one that apparently leads from truth to truth, but doesn't in fact. This can happen either when the steps used in the argument are only apparently, but not actually, good; in this case, we say that the argument is or contains a fallacy (Aristotle gives a long categorization of different kinds of fallacies in the *Sophistical Refutations*, and many medieval authors take up this discussion). Sometimes, however, every single step in the argument is logically correct, and yet the assumption that the premises are true is not enough to guarantee the truth of the conclusion. Such arguments are arguments from paradoxical or otherwise problematic sentences, and were variously called by the medieval philosophers *sophismata* "sophisms" (that is, arguments that a Sophist or one who reasons sophistically would use) or *insolubilia* "insolubles" (though they were not, strictly speaking unsolvable, merely very difficult to solve).

In the 14th century, it was quite common for logicians to include separate chapters — or even write distinct treatises — discussing sophisms and insolubles. The types of arguments considered range from the logically deep and difficult to handle ones, such as the Liar paradox, to the merely amusing ones, such as the many medieval arguments aimed

at proving someone to be an ass. For a representative view of sophismatic arguments, see the final treatise of Buridan's *Summulae* (2001).

3 Arguments According to Their Form

An argument is identified as demonstrative, dialectical, or sophistical on the basis of the probity of the conclusion on the basis of the premises. But within each of these three categories there is a variety of types of argument forms. In this section, we take up a typology of arguments based on their structure.

3.1 Syllogistic Arguments

While some medieval authors use "syllogism" and "argument" synonymously, properly speaking syllogisms are a subset of arguments, having a specific form and special properties. A syllogism is, according to Buridan:

> an expression in which, after some things have been posited, it is necessary for something else to occur on account of what has been posited, as in "Every animal is a substance; every man is an animal; therefore, every man is a substance" (2001: 308).

This definition is almost verbatim from Aristotle, *Prior Analytics* I.1, and variations on it can be found in almost every medieval discussion of syllogisms (cf., e.g., Sherwood 1966: 57; Bacon 2009: 4).

A syllogism is an argument comprising three statements, two of which are the premises and the third of which is the conclusion. Each of the three statements has a subject term and a predicate term, and, taken together, there are exactly three terms which occur in the three statements. The predicate term of the conclusion is called the "major term," and the premise which contains the major term is called the "major premise." The subject term of the conclusion is called the "minor term," and the premise which contains the minor term is called the "minor premise." The term which appears in both premises but not in the conclusion is called the "middle term." Kilwardby describes the difference between demonstrative

and dialectical syllogisms by saying that the latter have "only a readily believable middle" term, whereas the former have "a necessary middle" (1988: 266–267); in a sophistical syllogism, the middle is merely apparent.

Further constraints are placed on the form of the statements on the basis of whether the syllogism is assertoric, modal, or otherwise, and we consider each in turn.

3.1.1 Assertoric Syllogisms

An assertoric, or categorical, syllogism, is made of categorical statements. A categorical statement is two terms combined with one of the following four copulas:

a "All ____ are ____."

e "No ____ is ____."

i "Some ____ is ____."

o "Some ____ is not ____."

Statements of type (a) and (i) are called "affirmative," while statements of type (e) and (o) are called "negative"; statements of type (a) and (e) are called "universal," while statements of type (i) and (o) are called "particular." Thus, the type of every statement in an assertoric syllogism can be uniquely identified by identifying its quality (affirmative or negative) and quantity (universal or particular).

As noted above, each syllogism is made up of three terms, each appearing in two of the statements. Letting *S* stand for the minor term, *P* for the major term, and *M* for the middle, we can identify three ways in which these terms can be arranged with respect to each other. The middle term can be the subject of one premise and the predicate of the other; it can be the predicate in both; or it can be the subject of both (cf. Sherwood 1966: 60; Buridan 2001: 310–311).[3] These ways are called "figures," and we give schematic forms of the three figures in Figure 1.[4]

1st	2nd	3rd
M__P	*P__M*	*M__P*
S__M	*S__M*	*M__S*
S__P	*S__P*	*S__P*

Figure 1: The three syllogistic figures.

Each of these figures can be turned into a "mood" by the insertion of a copula, to determine the statement-types of the premises and conclusion. An example of a first-figure syllogism with universal affirmative statements is the following:

All men are mortal.

All Greeks are men.

All Greeks are mortal.

Four of the first-figure moods were picked out as "perfect," that is, self-evidently valid and also such that any other valid mood could be proven from one of the perfect ones.

Each valid syllogistic mood was given a name by the medieval logicians; the mood exemplified by the previous syllogism was called "Barbara." The thoughtful reader will be struck by the fact that "Barbara" contains three "a"s, while the syllogistic mood denoted by this name contains three universal affirmative statements, which were labeled above with "a," and might wonder if this is mere coincidence. The answer is no. The names of the valid syllogisms contain not only an indication of which types of statements the premise and the conclusion are, but also encode the perfect syllogism from

which they should be derived as well as the means of deriving them by means of simple conversion (indicated by "s"), conversion *per accidens* (indicated by "p"), and proof by contradiction or *reductio* (indicated by "c"), along with possibly interchanging the two premises (indicated by "m"). (We cannot go into the details of these conversion rules here, but direct the interested reader to Malink (2013) and McCall (1963) for the full story.) These mnemonic names were put together into a hexameter poem, the earliest extant version of which occurs in Sherwood's *Introduction* (1966: 66):

> Barbara celarent darii ferio baralipton
>
> Celantes dabitis fapesmo frisesomorum
>
> Cesare camestres festino baroco
>
> Darapti felapton disamis datisi bocardo ferison.

A student who memorized this poem along with which figure each mood belonged to had at the tip of his tongue everything he needed to prove all valid syllogisms. As a result, DeMorgan in the 19th century called these "magic words . . . words which I take to be more full of meaning than any that ever were made" (1847: 130).

3.1.2 Modal

The syllogisms in the previous section were called "assertoric" because they deal with statements at the level of assertion only. Aristotle's account of assertoric syllogisms in the *Prior Analytics* is clear and complete, and it is no surprise that it has been the primary focus of commentators for millennia after. However, the assertoric syllogistic was not Aristotle's primary focus. Rather, the bulk of the *Prior Analytics* (chs. 3, 8–22) is devoted to syllogistics which involve modal statements. A modal statement is one which makes a statement not about truth or falsity (as an assertoric statement does) but rather about necessity, impossibility, possibility, or contingency. Each of these are different "modes" (hence "modal") or ways that a statement can be: it can be necessary (that is, always true); it can be impossible (that is, always false); it can be possible (that is, it is not impossible); or it can be contingent (that is, neither necessary nor impossible).

Aristotle's theory of modal syllogisms is deeply problematic (many modern commentators believe it to be fundamentally flawed (Lukasiewicz 1957; McCall 1963); but see Malink (2013) for a rehabilitation). Rehabilitating his theory was an important concern for 13th century commentators on the *Prior Analytics*, and some of the modal syllogistics developed during this period are remarkably sophisticated. Perhaps the best-known account is due to Albert the Great (d. 1280), but his theory was heavily influenced by Robert Kilwardby's, and Kilwardby (d. 1279) was in turn indebted to the Arabic logician Averroës (1126–1198; see Thom 2007).

3.1.3 Extended

Assertoric syllogisms, and modal syllogisms built on the assertoric syllogistic, are quite constrained in the type of statements they can express. For example, the arguments "Every man is an animal, therefore every head of a man is a head of an animal" and "Every human is male or female, every male is mortal, every female is mortal, therefore every human is mortal" cannot be represented in classical syllogistic form. Even the following argument, which is often considered to be the canonical example of an Aristotelian syllogistic, is not a syllogism, strictly speaking:

All men are mortal.

Socrates is a man.

Therefore, Socrates is mortal.

This isn't a syllogism because neither the minor premise nor the conclusion have the form of one of the four categorical statements.

Medieval authors recognized these shortcomings, and developed ways of extending the syllogistic to handle a variety of more complex inferences, such as those involving singular or indefinite propositions (e.g., "Socrates is mortal," "Man runs," "A human being is a donkey," "That stone is irrational"), quantified predicates (e.g., "Some man sees every

donkey"), or relational or molecular terms such as in the first two arguments highlighted. In particular, the development of the theory of the "expository syllogism" is one of the genuinely new medieval contributions to logic (Parsons 2014).

3.1.4 Divine

A special class of syllogisms which Aristotle did not discuss at all but which deeply interested medieval logicians are syllogisms concerning divinity, that is, God. Consider the following argument, which many people consider to be a paralogism, rather than a real syllogism:

The Father is God.

The Son is God.

The Father is the Son.

This has the form of a valid (extended) syllogism, but on orthodox trinitarian theology, the first two premises are true while the conclusion is false.

Medieval philosophers took seriously the challenge provided by these arguments and sought to answer the question of why this (apparently) valid argument (apparently) fails. One of the most interesting accounts occurs in an anonymous manuscript written at the end of the 14th or beginning of the 15th century (Maierù 1988). In this text, the author introduces a threefold division of categorical statements on the basis of the type of predication contained: Formal, Personal, or Essential. He then argues that the above syllogism is invalid if the type of predication used in the premises and the conclusion is personal or formal; but if the premises are personal predications and the conclusion is an essential predication, or if all are essential predications, the syllogism is valid. The author even explains why it is that Aristotelian syllogistic theory seems, at first blush, to provide incorrect results when reasoning about the trinity. He say that "Aristotle and the other philosophers, ignoring this special mode of being in divinity, did not consider this special mode of predication and

syllogistic reasoning in divine things" (Uckelman 2009: 177). Because Aristotle only admitted statements of formal predication in his syllogistic — because in creation, all predications are formal — his theory did not have the expressive power needed to be able to deal with syllogisms concerning divinity.

3.2 Non-Syllogistic Arguments

The syllogistic, as part of the medieval inheritance of Aristotle, rightly occupied a central place in medieval philosophical and logical developments, but as modern logicians know, it does not exhaust the range of possibility for good argumentation. In this section, we look at non-syllogistic arguments, concentrating on two types: topical arguments, which are taken as prototypical of the dialectical category of argument, and the so-called "hypothetical syllogisms," which are neither (wholly) hypothetical nor syllogisms, but rather a medieval name for what we know as propositional logic.

3.2.1 Topical Arguments

Topical arguments take their name from the *Topics,* and are closely connected to the dialectical reasoning of §2.2. A dialectical argument, per Sherwood, "derives its probability from [dialectical] grounds" (1966: 70), or τοποι. Topical arguments are thus ones which derive their strength from one of the maxims discussed in the *Topics*.

Such arguments can take many different forms, but for the most part topical arguments share a close affnity with syllogisms, in that any good topical argument is in principle able to be rehabilitated into a proper syllogism by introducing premises with a suitable middle term. Thus, many topical arguments are best understood as enthymemes, that is, incomplete syllogisms (cf. Peter of Spain's mid-13th century *Summaries of Logic* 2014: 199). Enthymemes are incomplete or "imperfect" (to use Bacon's description) because an enthymeme "argues from one proposition actually posited and the other implied" (2009: 300). An enthymeme can be perfected by positing the implied proposition.

Sherwood offers a number of topical arguments and their associated syllogisms. We give just one, as an illustrative example (1966: 85):

The Moors have weapons,

Therefore the Moors have iron.

This argument is justified on the basis of the maxim “if what depends on the matter exists, then that matter exists,” and the topical argument can be converted into a syllogistic argument as follows:

All people who have weapons have iron.

The Moors are people who have weapons.

Therefore, the Moors are people who have iron.

Dialectical grounds can be divided into intrinsic, extrinsic, or mediate (1966: 71), depending on the nature of the middle term which is “extracted” in order to turn the topical argument into a syllogistic one:

> when the argument is extracted from an internal property of one of the terms of the question, the ground is called intrinsic; when from an extrinsic property, the ground is called extrinsic; when from a mediate property, the ground is called mediate (1966: 71).

As a result, topical arguments can be divided into these three categories depending on the nature of the supplementary middle term used to construct a corresponding syllogism. The variety and diversity of the topical maxims mean that dialectical arguments come in many varieties; what ties them altogether into a coherent type of argument is their basis on a maxim and the fact that a corresponding syllogism can always be constructed.

3.3 Propositional Reasoning

In this section, we turn to what perceptive readers will have noticed as glaringly lacking so far, namely: all of the non-Aristotelian forms of arguments, and in particular arguments whose goodness is grounded in formal validity arising from the propositional structure of the premises and conclusion. The development of propositional logic is one of the distinctly un-Aristotelian developments in medieval logic, and in fact, the "discovery" (for the second time in the history of logic, cf. Martin 1991: 303–304) by Peter Abelard of propositional logic is one of the most significant contributions of medieval logic.

In his *Logica Ingredientibus*[5] and *Dialectica* (1970), Abelard developed a theory of reasoning that took as its basic building blocks not terms (as is done in the syllogistic) but propositions or statements. These building blocks can then be combined to make complex statements by means of negation, conjunction, disjunction, and conditionalization. It is because conditionalization was taken as the most important type of argument of this kind (because of the close relationship between hypothetical propositions and logical consequences) that this branch of medieval argumentation was often known as "hypothetical syllogisms."

This branch of logic was developed in great detail in the 14th century, in treatises *De consequentia* "on consequences," or as chapters in larger, generalist logic treatises. In these treatises we can find all of the familiar modern rules for propositional arguments, such as "The truth of a conjunctive [proposition] requires that both categoricals be true, and for its falsity it suffices if either of them is false" (Buridan 2001: 62), "For its [a disjunctive proposition's] truth it is required and is sufficient that one member of it be true, and for its falsity it is required that both its members false" (ibid.: 63), and "The truth of a conditional requires that the antecedent cannot be true without the consequent, hence every true conditional amounts to one necessary consequence. Its falsity requires that the antecedent be true without the consequent" (ibid.: 61), all of which are taken from Buridan's *Summaries*. Other rules express meta-properties of logical consequence that are well-known today, such as the rule that "Whatever is antecedent to the antecedent is antecedent to the consequent" (a statement of transitivity) or the rules of *ex falso quodlibet* and *a verum quolibet*, all found in Burley's 1325–1328 *On the Purity of the Art of Logic* (1951: 1–2).

4 Arguments according to Goal or Purpose

The previous two typologies have focused on "argument" as the logician defines the word: a collection of statements which has certain properties. In this section, the typology we introduce brings us back closer to the non-philosophical meaning of "argument," as a dispute between two (or more) people. While modern logic has lost much of its disputational nature, argumentation was born in a multi-agent setting (cf. the notes above concerning the role of argument in persuasion, and the connection between argumentation and rhetoric), and one of the most unique developments in medieval philosophy was built on this Aristotelian foundation: the logical disputations *de obligationibus*.

In *Topics* VIII.4, Aristotle distinguishes three types of disputations: disputations for teaching and learning (*didactic*), disputations for competitive purposes (*eristic*), and disputations for the sake of practice and experiment (*dialectic*). Eristic disputations involve sophistical reasoning, and are directed at glory and victory, rather than truth, as noted above. A didactic disputation takes place between a teacher, who is knowledgeable, and a student, who is not, and the goal of the disputation is to lead the student to the teacher's knowledge. In a dialectical disputation, on the other hand, the two participants work together to determine the truth of some matter, in a cooperative fashion. For Aristotle, the method of a dialectic disputation is the method of question-and-answer: one person proposes a question, and the other can reply either "yes" or "no," or by clarifying an ambiguity.

Medieval disputations *de obligationibus* were a special type of disputation, somewhere between dialectic and eristic. There are two participants, an Opponent and a Respondent, and during the disputation the Opponent puts forward propositions that the Respondent may then concede, deny, or remain agnostic about in accordance with certain rules (which he is "obliged" to follow, hence the name). The earliest treatises on these disputations date from the first decades of the 13th century, and the genre continued to be a part of the logical canon for the next two centuries. Six species can be identified: positing, withdrawing, doubting, institution, petition, and "let it be true that." Of these, positing was by far the most important, and the one that authors most concentrated on.

Though most authors agreed on the general principles of *obligationes*, there was no unified theory throughout this period. Instead, each author developed his own idiosyncratic theory, depending on the specific species of disputation he recognized and the details of the rules governing them. Nevertheless, we can broadly classify obligational disputations into two types: those which follow the "old response" rules typified by Burley (1988) and those which follow the "new

response" rules typified by Roger Swyneshed, 1330–1335 (Spade 1977). We illustrate the difference between the old response and the new response by considering the species "positing," the rules for which were generally agreed on.

A positing disputation begins when the Opponent puts forward a contingently false sentence which the Respondent admits. In further rounds of the disputation, the Opponent puts forward statements individually, and the Respondent must:

- Accept the statement if it is relevantly following or irrelevant and true.
- Deny the statement if it is relevantly contradictory or irrelevant and false.
- Remain agnostic if the statement is irrelevant and neither known to be true nor known to be false.

The difference between the old response and the new response lies in how "relevantly following" and "relevantly contradictory" are defined. Under the old response, which we find in the early treatises from the 13th century, a statement relevantly follows if it is a logical consequence of everything that has been conceded along with the negations of everything that has been denied so far; it is relevantly contradictory if its negation is relevantly following; and it is irrelevant if it is not relevant in either way. "Relevance," in the old response, is a dynamic concept, potentially changing with each step of the disputation. This dynamicity introduced counterintuitive outcomes, so Swyneshed modified the definition, and disputations following the new definition came to be known as the "new response." In the new response, relevance is defined with respect to the initial statement only; a statement is relevantly following if it is a logical consequence of the original statement that the Respondent admitted; it is relevantly contradictory if its negation is relevantly following; and it is irrelevant if neither. This static conception of relevance removed the original issues, but brought in problems of its own, problems which we sadly cannot enter into here due to reasons of space (for further info, see Uckelman 2012 and Dutilh Novaes & Uckelman 2016).

5 Conclusion

These typologies that we've provided are not exhaustive, nor have we been able, in this chapter, to discuss every type of argument used in medieval philosophy, nor even yet every type of argument explicitly discussed by medieval philosophers. For example, both Bacon and Peter of Spain divide arguments into four types:[6] Syllogism, Enthymeme, Induction, and Example (Bacon 2009: 273; Spain 2014: 199); we discussed syllogisms (§3.1) and enthymemes (§3.2.1) above, but have covered neither argument by induction nor argument by example. Bacon briefly glosses the former as an argument from singular premises to a universal conclusion (ibid.: 301), while the latter is roughly argument by analogy (ibid.: 302). We have chosen the typologies we have to provide a broad introduction to the various types, and their applications, with the hope to have whet the reader's appetite enough for her to pursue the matter further.

Notes

1. While William here speaks of "syllogism," he is using the term as a generic word for "argument"; it is not restricted to the categorical Aristotelian syllogism.

2. The first case, (a), arises in "skeletal" arguments: ones which have only a form but no matter (content), such as "Every a is b, every c is a, therefore every c is b" (Bacon 2009: 305).

3. Sherwood gives us a short poem by which we can remember the arrangement of the figures: "*Sub pre prima, bis pre secunda, tertia bis sub*" (1966: 66), i.e., "In the first, subject and predicate, in the second both predicate, in the third both subject."

4. Medieval and modern commentators have noted that, strictly speaking, there is a fourth figure, where the middle term is the predicate of the major premise and the subject of the minor. Aristotle does not mention this arrangement. Buridan's explanation for why he doesn't is as follows: "[a fourth figure] could be posited, but Aristotle did not care to discuss it, for it would not be different from the first figure, except in the order of the premises, and the same conclusion would be inferred in one as in the other, although that same conclusion, which would be direct in the first figure, would be indirect in the fourth, and conversely" (2001: 311). (A conclusion is indirect when the minor term is predicated of the major). As a result, the fourth figure is superfluous.

5. The *Logica Ingredientibus* has not yet been edited in full; see King 2015 for a list of the partial editions that have been made.

6. To these four Kilwardby adds a fifth, "counterinstance" (1988: 268).

References

Abelard, Peter (1970) Petrus Abaelardus: Dialectica, ed. L. M. de Rijk. Assen: Van Gorcum.

Bacon, Roger (2009) *The Art and Science of Logic*, trans. T. S. Maloney. Toronto: Pontifical Institute of Medieval Studies.

Boh, I. (1985) "Belief, Justification, and Knowledge — Some Late-medieval Epistemic Concerns." *Journal of the Rocky Mountain Medieval & Renaissance Association* 6: 87–103.

Buridan, John (2001) *Summulae de Dialectica*, trans. Gyula Klima. New Haven, CT: Yale University.

Burley, Walter (1951) *De Puritate Artis Logicae*, ed. P. Boehner. St. Bonaventure, NY: The Franciscan Institute.

Burley, Walter (1988) "Obligations (selections)." In Kretzmann and Stump (1988), 369–412.

De Morgan, A. (1847) *Formal Logic: Or, the Calculus of Inference, Necessary and Probable*. London: Taylor and Waldon.

Dod, B. G. (1982) "Aristoteles Latinus." In N. Kretzmann, A. Kenny, and J. Pinborg, eds. *The Cambridge History of Later Medieval Philosophy*. Cambridge: Cambridge University Press, pp. 45–79.

Dutilh Novaes, C. and S. L. Uckelman (2016) "Obligationes." In C. Dutilh Novaes and S. Read, eds. The Cambridge Companion to Medieval Logic. Cambridge: Cambridge University Press, pp. 370–395.

Kilwardby, Robert (1988) "The Nature of Logic." In Kretzmann and Stump (1988), 264–277.

King, P. (2015) "Peter Abelard." In *Stanford Encyclopedia of Philosophy*, ed. E. N. Zalta. Summer edition. http://plato.stanford.edu/archives/sum2015/entries/abelard/.

Kretzmann, N. and E. Stump, eds. (1988) *Cambridge Translations of Medieval Philosophical Texts, Volume 1: Logic and the Philosophy of Language*. Cambridge: Cambridge University Press.

Lukasiewicz, J. (1957) *Aristotle's Syllogistic: From the Standpoint of Modern Formal Logic*. Oxford: Clarendon Press.

Maierù, A. (1988) "Logic and Trinitarian Theology in *De Modo Predicandi ac Sylogizandi in Divinis*." In *Meaning and Inference in Medieval Philosophy: Studies in Memory of Jan Pinborg*, ed. N. Kretzmann. Dordrecht: Kluwer Academic Publisher.

Malink, M. (2013) *Aristotle's Modal Syllogistics*. Harvard, MA: Harvard University Press.

Martin, C. J. (1991) "The Logic of Negation in Boethius." *Phronesis* 36: 277–304.

McCall, S. (1963) *Aristotle's Modal Syllogisms*. Amsterdam: North-Holland Publishing Company.

Parsons, T. (2014) *Articulating Medieval Logic*. Oxford: Oxford University Press.

Sherwood, William of (1966) William of Sherwood's Introduction to Logic, trans. N. Kretzmann. Minneapolis: University of Minnesota Press.

Spade, P. V. (1977) "Roger Swyneshed's Obligationes: Edition and comments." *Archives d'Histoire Doctrinale et Litteraire du Moyen Age*, 44: 243–285.

Spain, Peter of (2014) Summaries of Logic, Text, Translation, Introduction, and Notes, ed. B. Copenhaver, with C. Normore and T. Parsons. Oxford: Oxford University Press.

Thom, P. (2007) *Logic and Ontology in the Syllogistic of Robert Kilwardby*. Leiden: Brill.

Uckelman, S. (2009) "Modalities in Medieval Logic." PhD Thesis, University of Amsterdam.

— (2012) "Interactive Logic in the Middle Ages." *Logic and Logical Philosophy* 21: 439–471.