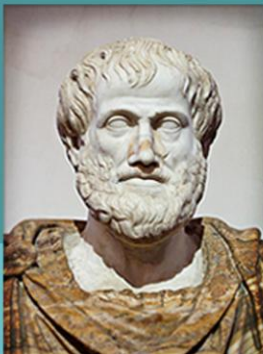


JOSEPH KENNY, OP

THE
SCOPE
OF LOGIC

ACCORDING TO ARISTOTLE, IBN SĪNĀ,
AND BENEDICT ASHLEY



THE SCOPE OF LOGIC
according to
Aristotle, Ibn-Sīnā, and Benedict Ashley

by
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INTRODUCTION

Is Logic merely an arcane meta-mathematical discipline, whose main value is to train (and entertain) the mind? Or does it have some mundane applications?

Aristotle and the medieval Arab and European tradition considered formal logic only an introduction to its more important theoretical and practical applications.

The Enlightenment, however, not only divorced science from philosophy, but also from the applications of logic. Philosophy in Europe was floundering even before the Enlightenment. With William Ockham, Nominalism carried the day. Then came the German Protestant Rudolph Glocenius (1547-1628), who introduced into all Christian philosophical tradition the novel terms of “psychology”, “ontology”, and “epistemology”. The Enlightenment thinker, Christian Wolff (1679-1754) further fragmented the organic unity of philosophy by dividing “empirical psychology” from “rational or philosophical psychology”. This established the modern separation of “science” from “philosophy”, and the classifying of the latter with “humanities” as against the “sciences”.

In logic, philosophy then restricted itself to the subject matter of the first three books of Aristotle’s logical corpus, and of these, mainly the *Prior Analytics*. This book is about the rules of syllogistic reasoning. Today’s philosophers have developed this into the highly complex discipline of Symbolic Logic. Symbolic logic, however, deals more with the symbols of mental relations than with the relations themselves. These symbols, for the ancients, would belong to Grammar; today they are discussed in Semiotics.

Modern and contemporary philosophers, therefore, have restricted themselves to formal logic: the categories, the quality and quantity of judgments, and the intricacies of argumentation, which they dissect and analyze by symbolic tools.

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In the meantime, they have abandoned the applications of logic to scientists, communication and media specialists, marketing strategists, election campaign managers and lobbyists.

Benedict Ashley, a philosopher and a theologian with a polymath mentality, still writing articles and books at the age of 97, has pioneered in bridging the gap between philosophy and science, and philosophy and the arts. See his autobiography on: <http://www.domcentral.org/study/ashley/vision.htm>, and a list of his writings in the Appendix.

As a necessary part of philosophy and of liberal education, following Aristotle, he proposes the study of “four modes of discourse”. These are poetics (story-telling, drama, film, all fine arts), rhetoric (the art of communication, persuasion, with its many applications), dialectics (exploratory investigation, culminating in hypothesis), and scientific logic (the requirements of demonstration).

This work defends the validity at the present time of Ashley’s retrieval of core ancient and medieval logic, showing how it can:

- give unity and focus to the arts and sciences,
- define political strategy,
- fine-tune the art and film industries,
- and serve as the drill-bit of scientific research.

Chapter I sets forth the broader tradition of Logic, showing its relevance today.

Chapter II presents Ibn-Sīnā’s own discourse on the place of Logic in philosophy, at the opening of *Ash-Shifā’*, *Al-Madkhal*. He assumes that philosophy deals with real being, and examines the role of Logic in the complex question of the mental existence of real things in the mind, as distinct from the purely reasonable beings of copula, universality, and the like.

Chapter III contains a brief but very relevant passage by Thomas Aquinas on this very question.

For more information on Benedict Ashley, an Appendix lists his publications and intended publications. One caution is that he keeps ahead of any list that pretends to be complete.

CHAPTER I

A LIVING TRADITION FROM ARISTOTLE TO IBN-SĪNĀ TO BENEDICT ASHLEY

Aristotle: the scope of his logic

Aristotle nowhere offers a prospectus of his writings, showing their inter-relationships. Which works pertain to logic? And how do they relate to one another?

Most editions of Aristotle list his logical works under the heading *Organon*. These comprise:

- *Categories* (αἱ κατηγορίαι)
- *Interpretation* (περὶ ἑρμηνείας)
- *Prior Analytics* (τὰ ἀναλυτικὰ τὰ πρότερα)
- *Posterior Analytics* (τὰ ἀναλυτικὰ τὰ ὕστερα)
- *Topics* (τὰ τοπικά)
- *Sophistical Refutations* (περὶ τῶν σοφιστικῶν ἐλέγχων).

Departing from the common classification, and following Ibn-Sīnā and Benedict Ashley, I also include his:

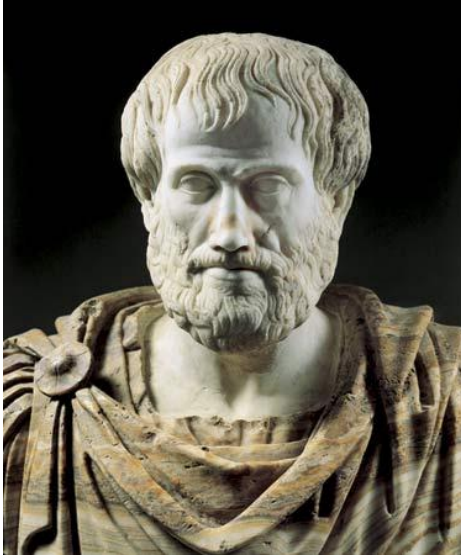
- *Rhetoric* (ἡ τέχνη ἡ ῥητορική)
- *Poetics* (περὶ ποιητικῆς).

The first three works are clearly related. *Categories* is about the building blocks of thought: the simple concepts of substance and nine accidents. *Interpretation* is about judgment, or the joining of two concepts by way of a statement or predication: $A = B$. *Prior Analytics* is about argumentation or syllogism, and involves three concepts: $A = B$ because of C .

These three books correspond to modern “formal logic”. Modern formal logic, in its calculating aspects, has gone far beyond Aristotle, particularly in Boolean logic, which is the basis of computer machine language.

The rest of Aristotle’s books raise problems. They come under a heading some disdainfully call “informal logic”. I would rather call it call “applied logic”. Formal logic has all the exactitude

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Aristotle

and comfort of mathematics. Applied logic, however, attempts in different ways to mirror reality. That is where so many philosophers, stamped by idealism, revolt.

Aristotle, in fact, was a realist. Even his formal logic is reality-based. The ten mental concepts he studies in the *Categories* mirror the diverse features of the real world he analyses in his *Physics*¹ and

Metaphysics.² The bond between subject and predicate, in a true affirmative judgment, mirrors a bond found in reality: “Chalk is white.”

Aristotle’s books on applied logic deal directly with our knowledge of reality. Aristotle was acutely conscious that our knowledge mirrors reality unevenly. There are some things we are sure of: first principles, primary or observational data. Extended observation yields causal connections: The summer rainy season in Nigeria results from the northerly position of the sun, which draws the ocean evaporation. The winter dry season results from the recession of the sun’s position to the south.

The *Posterior Analytics* defines science and explains its requisites. It is knowledge of a universal fact (All A is B), and the proper immediate reason for that fact (All A is B because of

¹ Book 3, chapter 3. See Commentary of Thomas Aquinas, Book 3, *lectio* 5.

² Book 5, chapter 7, 1017a. See Commentary of Thomas Aquinas, Book 5, *lectio* 9.

C). Put in syllogistic form, this is a demonstration (ἀπόδειξις). The *Posterior Analytics* discusses scientific methodology as applicable to all sciences. Each special science has its own peculiarities. Thus mathematics is deductive, whereas natural science is typically hypothetical: If you want a good harvest, you must have these requisites. But you may have these requisites and still not have a good harvest because of a hail storm.

The human mind craves certitude, but in most matters falls short of it. This state of mind is opinion, or an educated guess. As is evident from any dissertation, the quest for certitude, or proving a thesis, must begin with an exploratory, or dialectical phase. One must survey what others have said about the topic, distinguish what is patently false from what is probable or likely, then do much laboratory or field work to isolate the true explanation. The *Topics* deals precisely with this preliminary phase of scientific research, by analyzing probable arguments.

Sophistical Refutations is rightly considered an appendix to the *Topics*, because it shows how to expose erroneous reasoning.

What about *Rhetoric* and *Poetics*? Aristotle, as we have seen, made no statement about the scope of his logic. Of the Greek Commentators, Ammonius, David and Simplicius open their logical works with extensive introductions to philosophy and the division of its parts, but are not specific about the parts of logic.³

Aristotle's *Rhetoric* begins with a comparison between rhetoric and dialectics. They both, unlike the sciences, are not restricted to a particular subject, but can discuss any issue whatsoever. Rhetoric, however, is "the faculty of discovering possible means

¹ See Ammonius, *In Porphyrii Isagogen (Commentaria in Aristotelem Graeca 4:3, Berlin, 1891), prooemium, 1-23*; Elias, *In Porphyrii Isagogen (Commentaria in Aristotelem Graeca, 18:1, Berlin, 1890), Prolegomena philosophiae, 1-34*; Simplicius, *In Aristotelis Categorias (Commentaria in Aristotelem Graeca 8, Berlin 1897), prooemium, 1-20*. Works of other Greek commentators on this subject have not survived. Note however, Alexander of Aphrodisias' Commentary on the *Topics*, where he compares dialectics with rhetoric (*Commentaria in Aristotelem Graeca 2:2, Berlin, 1891*).

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of persuasion.” It deals with human choice. This is related to the universal necessary principles of Ethics and Politics, but is in itself particular and contingent. Its arguments, therefore, are not scientific, but consist of:

1. most importantly, the perceived character of the speaker
2. appealing to the disposition (mind-set or mood) of the audience
3. arguments in the form of:
 - a. examples — corresponding to induction (ἐπαγωγή)
 - b. enthymemes — abbreviated syllogisms.

Aristotle lists three kinds of rhetoric: deliberative (συμβουλευτικόν) about the future, addressed to legislators, judicial (δικανικόν) about the past, addressed to judges, and ceremonial (ἐπιδεικτικόν) speeches to praise or blame someone. These categories have later adaptations or correspondences:

Aristotle	Religious preaching	Some contemporary instances
Deliberative	Moral	Advertizing, election campaigning
Judicial	Doctrinal	Political, religious polemics
Ceremonial	Inspirational	Awards, diplomatic addresses

Aristotle’s *Rhetoric* is clearly an example of applied logic. He uses all the resources of formal logic, together with principles drawn from his *Ethics* and *Politics* to offer very practical and concrete advice to actors in the political arena. We may note that, for Aristotle, rhetoric is supposed to serve the body politic by promoting virtuous, not vicious, action.

In contrast to the *Rhetoric*, the *Poetics* has little apparent connection to the logical works so far examined. But if we look more closely, we will see that it does. Drama is the foremost form of poetry, which envelops the other fine arts. The soul of a drama is the plot. The principal character maneuvers through a tightly knitted chain of actions to a conclusion. Irrelevant episodes must be excluded. Thus Aristotle states:

Poetry, therefore, is a more philosophical and a higher thing than history: for poetry tends to express the universal, history the particular. By the universal I mean how a person of a certain type on occasion speaks or acts, according to the law of probability or necessity. (ch. 9)

In fact, a good plot can be reduced to a syllogistic statement: Character A achieves result B because of action C. The statement, of course, has none of the tear-jerking pathos and catharsis of the full drama. But the drama acts as an example of universal moral truth.

The function of drama, however, is not to teach or to exhort, but to enable the audience to contemplate moral beauty and truth in the concrete. It is a kind of “philosophy made simple” or “philosophy for the masses”. It also can serve as a relaxation for philosophers, part of εὐτραπέλεια, which Aristotle discusses in the *Nicomachean Ethics*.⁴

Ibn-Sīnā

In addition to the works of Aristotle listed above, both the Greek commentators and Ibn-Sīnā preface the collection with Porphyry’s Εἰσαγωγή, or “Introduction”, which is a commentary on Aristotle’s Κατηγορίαι.⁵ In contrast to the silence of Aristotle and the Greek commentators, in the **شفاء** Ibn-Sīnā explicitly lists Rhetoric and Poetics as the eighth and ninth books of the logical section.

⁴ *Nicomachean Ethics*, Book 2.

⁵ Unaware of the reasons for including rhetoric and poetics within the scope of logic, Ibrahim Madkour, in his preface to Ibn-Sīnā’s **مدخل**, protests placing them there: ولكن الخطابية والمنطق يختلفان عند أرسطو غاية وموضوعا، فبينما الأولى تعتمد على احتمالات وأمور شائعة وتهدف إلى منفعة اجتماعية، إذا بالثاني يبحث عن اليقين ويعتمد على الحقائق المطلقة الضرورية (p. 47).



Ibn-Sīnā

At the opening of the first book, **المدخل**, Ibn-Sīnā gives an introduction to philosophy in general and to logic in particular. This discussion has no comparable parallel in **النجاة** or **الإشارات والتنبهات**. The full text (Arabic and English translation) is given in Part II, while its principle points are the following:

The aim of philosophy is to arrive at the reality of all things, to the extent that this is possible for man to do. Existing things either exist apart from our choice and action, or they exist as a result of our choice and action.

Knowledge of things of the first category is called speculative philosophy, while knowledge of things of the second category is called active philosophy. Speculative philosophy aims at perfecting the soul with knowledge only. But active philosophy aims at perfecting the soul not merely for knowledge, but to know how to apply knowledge to action.

The aim of speculative philosophy is to know something, apart from action. But the aim of active philosophy is to

know what to do, while speculative philosophy befits the mind better...

So the kinds of science:

- either express existing things along with motion both in our concept of them and in their real existence, involving matter of a specific species,
- or they express existing things separated from matter in our ideas, but not in reality,
- or they express existing things separated from matter both in their existence and in our ideas.

The first of these divisions of science is natural science, the second is pure mathematics and the science of number commonly understood. But knowledge of the nature of number as concrete number does not belong to that science. [It belongs to natural science.] The third division is divine science. If things in nature fall within these three categories, then these are the speculative sciences.

As for active philosophy, it either is concerned with teaching ideas used for guiding human society in general, and it shows how to govern a city—in which case it is called Political Science, or it is concerned with guiding human society in a particular, and it shows how to govern a family, or it is concerned with guiding the individual person in purifying himself, and is called Ethics.

As for logic:

The essences of things can be in the things themselves. They can also be in our minds. There they can be expressed in three ways:

- the essence as such, without reference to any existing thing and its real concomitants,
- the essence as it exists in individuals, in which case it is accompanied by its individual accidents.
- the essence as it is represented by a concept. In that case it has accidents specific to its mental status, such as being a subject or a predicate, universality and a

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particularity of predication, essentiality and accidentality of predication, and such other things which you will come to know.

Logic is concerned with the last of these three.

And since this speculation is not about things in so far as any of them exist in either of the two ways mentioned above, but in so far as they help us to grasp the conditions of real things, and since philosophy, according to Aristotle, attempts to investigate things as they really are, and is divided according to the states of reality we have mentioned above, then this science cannot be a part of philosophy. But since it assists us in doing that, it is therefore an instrument of philosophy. And since philosophy, according to Aristotle, engages in all rational investigation, under any aspect, in this respect it is also, according to him, a part of philosophy.

Ibn-Sīnā explains further:

The science of logic does not examine these individual things in so far as they are either existing in themselves or existing in the mind. Nor does it examine the essences of things as essences, but only in so far as they are subjects or predicates, universal or a particular etc., qualifying these meanings in the way we explained above.

Furthermore, Ibn-Sīnā strongly insists that logic is not about language, except incidentally:

The study of vocabulary is necessary, but it is not the primary business of logic. It pertains to logic only from the aspect of rhetoric and dialectics. If it were possible to learn logic with clear thinking and attention to the meanings alone, that would be sufficient. And if the speaker could look at what he has in mind by some other means, he could dispense from words altogether. But, since it is necessary to resort to words, and especially since it is impossible to think and put meanings together

without imagining words along with them, and thinking seems to be talking to oneself in imagined words, therefore words must have different states which correspond to different states of meanings in the soul, and these meanings would have certain characteristics even if words were not there. Therefore the science of logic must have some sections which deal with the states of words. If it were not for what we have pointed out, logic would not need such a section. Because of this necessity, speaking about the words that match meanings is like speaking about the meanings themselves, while the arrangement of words improves the job.

In the following passage, he discusses, without reference to particular books of Aristotle, the different areas of applied logic:

The purpose of the science of logic is to help the mind know these two things only:

- what kind of speech duly represents a concept, so that it can make known the real essence of that thing, how it can point it out, even if it does not reach its real essence, and how speech can be corrupt, creating the impression that it is doing what we said, but is not really doing it, and what is the difference between the two
- secondly what kind of speech duly represents an affirmation, so that it is certain of the truth and does not admit of contradiction, also how it can represent affirmation that approximates certitude, and how one can think his speech is in either of these states, but it is not so, but is false and corrupt, also how a person can have an opinion or inclination or satisfaction in a statement that is not a firm affirmation, and how speech can influence a soul in the same way as affirmation and negation, and this by way of attraction or repelling, or of opening his heart or closing it, not through affirmation, but through imagination. For imagination, in such cases, often acts just like affirmation. For if you say that honey is

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bitter and causes vomiting, nature flees from tasting it, even though [the mind] denies this, just as you would flee from it if it you affirmed it to be true, or came to something similar or near to an affirmation.

In the preceding passage, the first paragraph clearly refers to the contents of *Sophistical Refutations*, part of dialectics. The second paragraph uses terminology specific to dialectics, poetics and rhetoric, (وميل نفس وقناعة من ظن), and talks of appeal to the imagination (غير تصديق جزم) characteristic of rhetoric and poetics.

This is the closest Ibn-Sīnā comes to giving a rationale for his nine books on logic, or a breakdown of logic into its component parts. Yet his *Organon*, like that of al-Fārābī before him, consists of:

1. المدخل	Paralleling Porphyry's Εἰσαγωγή
2. المعقولات	Paralleling Aristotle's Κατηγορίαι
3. العبارة	Paralleling Aristotle's Περὶ Ἑρμηνείας
4. القياس	Paralleling Aristotle's Ἀναλύτικα Πρώτερα
5. البرهان	Paralleling Aristotle's Ἀναλύτικα Ὑστερα
6. جدل	Paralleling Aristotle's Τόπικα
7. السفسطة	Paralleling Aristotle's Περὶ τῶν σοφιστικῶν ἐλέγχων
8. لخطابة	Paralleling Aristotle's Τέχνη Ῥητορική
9. الشعر	Paralleling Aristotle's Περὶ Ποιητικῆς

For comparison, we can look at the breakdown of logic given by al-Fārābī, first in his *ما ينبغي أن يقدم قبل تعلم الفلسفة*. There the focus of logic is demonstration:⁶

- What precedes demonstration: the parts of the premises:

⁶ In section 2: معرفة غرض ارسطو في كل واحد من كتبه, pp. 4-5, in Dieterici, *Alfarabi's Philosophische Abhandlungen* (Leiden: Brill, 1890, 49-55).

- Judgment: Περὶ Ἑρμηνείας
- Concepts: Κατηγορίαι
- Demonstration itself:
 - The form: Ἀναλύτικα Πρότερα
 - The elements: Ἀναλύτικα Ὑστερα
- What falls short of demonstration:
 - Completely false: Περὶ Ποιητικῆς
 - True and false in equal measure: Τέχνη Ῥητορικὴ
 - Mostly true, partly false: Τόπικα
 - Mostly false, partly true: Περὶ τῶν σοφιστικῶν ἐλέγχων.

Al-Fārābī gives a different breakdown in *التوطئة في المنطق*, based on the syllogism (قياس):⁷

- Special guidelines (قوانين خاصة):
 - Demonstrative philosophy — aiming at certitude
 - Dialectics — aiming a probability
 - Sophistry — giving the mere appearance of true
 - Rhetoric — aiming at persuasion (إقناع) without certitude
 - Poetry — pictorial representation of reality
- Common guidelines (قوانين مشتركة):
 - Categories
 - Judgment rules
 - Syllogistic rules

Ibn-Sīnā does not repeat al-Fārābī’s divisions of logic, I suspect because he was not satisfied with either of them. For a fuller treatment of the parts of logic, we turn to Benedict Ashley.

Benedict Ashley’s “four modes of discourse”

⁷ 12-13. (تهران: مطبعة بهمن، 1308)، محمد تقي ونشن ثروه، *المنطقيات للفارابي* 1

Benedict Ashley's earliest and most complete discussion of applied logic is *The arts of learning and communication*, written with the collaboration of the staffs of the St. Xavier College School System and the Albertus Magnus Lyceum (Dubuque: Priory Press, 1958).⁸ That was a text-book for students.

He, along with Pierre Conway, wrote a highly researched study of the history and theory behind his position in *The Liberal Arts in St. Thomas Aquinas* (The Thomist Press, 1959), which is a reprint of an article appearing in *The Thomist* 22:4 (October 1959), 460-532.

The most recent and comprehensive exposition of his thought is his *The Way Toward Wisdom: An Interdisciplinary and Contextual Introduction to Metaphysics* (Notre Dame Press for the Center of Thomistic Studies, University of St. Thomas, Houston, TX, 2009). This book has extensive sections on the scope, validity and methodology of natural science, mathematics, and logic.

Shortly before that, he wrote a summary of his position in the section "The four modes of discourse" of his 2003 monograph: "Dominican guide for sharing our secular resources for the study of theology for preaching in the twenty-first century".⁹ This section I reproduce below:

⁸ See the online edition:
<http://www.domcentral.org/study/ashley/arts/default.htm>.

⁹ See the online edition:
<http://www.domcentral.org/study/ashley/guide/dominicanguide.pdf>.



Benedict Ashley, O.P.

Human thinking and its expression in language as communication between persons can take four simple forms. Although of these simple forms two or more are often given mixed expression, one or the other will be principal. These are:

1) Poetic or Narrative Discourse such as is found in poetry, epics, novels, short stories, plays, films, etc. and is closely related to music and the plastic and performance arts. Its purpose is *contemplative*, that is, it is to be enjoyed simply as a human experience in which truths are conveyed in a concrete, sensuous manner so fitted to the human mode of cognition that they are beautiful and

pleasing for their own sake, not for some use, and hence are recreative, that is, they prepare us for real life experiences. Literature because it employs sensuous metaphor and other forms of analogy has not only a cognitive but also an empathetic, affective, emotional element.

While it may be temporarily arouse negative emotions it concludes in positive pleasure and rest (*catharsis*). Such narratives can be either *fiction* or *history* depending on whether what is narrated is imaginary or has actually occurred. The elements of such discourse are principally (a) the *action described*, (b) the *characters* who act or are acted upon, and (c) the *thoughts* they have or express, but these are conveyed through (d) *language, sound (music), and physical movement and scenes (gesture, dance, spectacle)*. The principal *historical* periods of literary style need to be noted.

2) Rhetoric such as is found in preaching, political speeches, advertising etc. Its purpose is not contemplative as for poetic discourse, but practical, since it is intended to move the audience to some action. It can employ all the techniques of poetic discourse but should end not in the satisfaction of the audience but in its stimulus to action. Hence rhetorical discourse is much concerned with analyzing the interests and motives of the audience in order to motivate them to a given action; yet genuine rhetoric does not seek to arouse irrational but reasonable and virtuous motivation. It especially concerned with (a) generating trust of the speaker in the audience, (b) analyzing the character of the audience, (c) finding arguments that will move them to action. The historical

development of rhetorical devices and especially, the theory of Christian homiletics. Renaissance humanism, and the post-modern theory of the “hermeneutic of suspicion” should be noted. Also the rhetorical character of *law* (as in the Old Testament Torah) and of *history* which usually has a political agenda should be noted.

3) Dialectical Discourse, in contrast to poetic and rhetorical discourse, seeks to appeal to reason apart from affective states of the audience. Its purpose is to clarify a problem and seek the conditions of insights that will furnish a genuine answer to that problem by arguing the merits of different possible solutions. It can take the form of debate between opposite positions, or simply an exploration and research concerning different hypotheses. Special attention should be given here to the history of (a) the *scholastic disputation*; (b) *apologetic polemics*; (c) modern “*public media*” and the current debate over “civic discourse” (Habermas).

4) Demonstrative Discourse, like dialectical discourse and unlike poet and rhetorical discourse, avoids affectivity. It seeks to provide a definitive and certain answer to a problem, although the type of certainty can differ for different kinds of problems. This kind of discourse achieves certitude by discovering the cause of an effect (*a posteriori* demonstration) or explains an effect by its cause (*a priori* demonstration). In any science, since effects are more evident to us than their causes, the existence of a cause must first be established, either by direct contact, or by *a posteriori* demonstration and then the scientific knowledge

thus acquired is ordered from cause to effect *a priori*.

In promoting a revival of these areas of applied logic, Benedict Ashley is not urging a return to the practice of a past age, because he finds fault with all of them. He says:

In the earlier Middle Ages, there was a tendency to identify the arts with philosophy, so that the *quadrivium* took the place of natural science, while ethics and metaphysics were absorbed into sacred theology. In the late Middle Ages, the tendency was to an exaggerated development of the dialectical and grammatical aspects of logic, but with little appreciation of its poetic and rhetorical side. There was a tendency, noted by Roger Bacon, to neglect the development of mathematics, and the study of languages.¹⁰

As for the Renaissance, he says, “rhetoric became the dominant art. Even in the study of rhetoric this classical tradition quickly degenerated. The art of rhetoric ceased to be an art of persuasion instrumental to politics, and became a mere art of ‘style’, so that the sterile study of grammar came to dominate education.”¹¹

In the present day, he goes on to say about *formal logic*, “the techniques of logical calculus which we call ‘symbolic logic’ must be given their proper instrumental role.”

“*Poetics*, functioning in literary criticism, needs to be given a rightful place, and not to be confused with a mere grammatical analysis of a text, as in ‘classical’ education.”

As for *rhetoric*, “the discoveries of ‘propaganda analysis,’ ‘mass communication techniques,’ ‘motivational research,’ etc. should be utilized.”

¹⁰ *The Liberal Arts in St. Thomas Aquinas*, p. 72.

¹¹ *Ibid.*, p. 71-72.

“The very considerable development of *dialectics*, as it is used in what we today call ‘the scientific method’ of hypothetical ‘theory construction’ must be recognized.”¹²

As for *demonstrative discourse*, Benedict Ashley laid out his fundamental ideas in a book he edited long ago, *Science in Synthesis: Report of the Summer Session of the Albertus Magnus Lyceum, River Forest, Ill, 1952*.¹³

Yet he warns against an uncritical adoption of every popular present-day approach:

At the same time that we enrich the liberal arts with modern advances, we must be very careful to see that we present these arts on a sound Aristotelian basis. In each field of art there exist today many very divergent views and much confused or erroneous doctrine. In the field of mathematics, for example, the *logician*, *formalist*, and *intuitionalist* schools are divided on the various principles of their science. If we teach a *logician* mathematics we will teach our students that the *quadrivium* and *trivium* are identical with each other. If we teach a *formalist* mathematics we will deny that mathematics is a science at all, and turn it into an art which has no purpose, a mere game, with the risk of inculcating a deep skepticism in young minds. If we teach the *intuitionist* approach we are likely to infect our students with certain Kantian assumptions.

Similarly in the field of logic an uncritical presentation of the modern “motivational research” approach to rhetoric will make them Machiavellians. An uncritical presentation of the “scientific method” in dialectics will

¹² *Ibid.*, p. 73.

¹³ As an update, he recommended to me Anthony Rizzi, *The science before science, a guide to thinking in the 21st century* (Baton Rouge: Press of the Institute for Advanced Physics, 2004). See the same author’s *Physics for realists: Mechanics. Physics with a common sense grounding* (Baton Rouge: Press of the Institute for Advanced Physics, 2008).

make them relativists. And finally an uncritical presentation of poetics and theory of the fine arts in terms of modern “symbolism” will make them irrationalists and pseudo-mystics.¹⁴

He observes that a curriculum should have at its core natural science leading to divine science, or wisdom, and not mere technical control or “creative self-expression”. That places mathematics and natural science in a central position, just as they are in the education planning of developing countries who are eager to catch up with the rest of the world.

¹⁴ *Ibid.*, pp. 73-74.

CHAPTER II

Ibn-Sīnā's Introduction to Logic

الشفاء

المقالة الأولى

من الفن الأول من الجملة الأولى وهي في علم المنطق
[الفصل الأول] فصل في الإشارة إلى ما يشتمل عليه الكتاب

Ash-Shifā'

First discourse

of the first treatise, which is the science of logic

Section 1: On the contents of this book¹⁵

قال الشيخ الرئيس أبو علي الحسين بن عبد الله بن سينا، أحسن الله إليه: وبعد حمد الله، والثناء عليه كما هو أهله، والصلاة على نبيه محمد وآله الطاهرين،

The Shayk ar-Ra'īs, Abū `Alī al-Ḥusayn ibn-`Abdallāh ibn Sīnā —may God be good to him— says: After praising God and honoring him as he deserves, and blessing his prophet Muḥammad and his holy family:

فإنّ غرضنا في هذا الكتاب الذي نرجو أن يمهلنا الزمان إلى ختمه، ويصحبنا التوفيق من الله في نظمه، أن نودعه لباب ما تحقّقناه من الأصول في العلوم الفلسفية المنسوبة إلى الأقدمين، المبنية على النظر المرتب المحقق، والأصول المستتبطة بالأفهام المتعاونة على إدراك الحق المجتهد فيه زمانا طويلا، حتى استقام آخره على جملة اتفقت عليها أكثر الآراء، وهجرت معها غواشي الأهواء.

وتحريت أن أودعه أكثر الصناعة، وأن أشير في كل موضع إلى موقع الشبهة، وأحلّها بإيضاح الحقيقة بقدر الطاقة، وأورد الفروع

¹⁵ The text is that edited by Ibrahim Madkour, (Cairo: 1976). The translation is my own.

مع الأصول إلا ما أثق بانكشافه لمن استبصر بما نبصره، وتحقق ما تصوّره، أو ما عذب عن ذكرى ولم يلح لفكرى. واجتهدت فى اختصار الألفاظ جدا، ومجانبة التكرار أصلا، إلا ما يقع خطأ أو سهوا، وتكتبت التّطويل فى مناقضة مذاهب جلية البطلان أو مكفية الشغل بما نقرره من الأصول، ونعرفه من القوانين.

ولا يوجد فى كتب القدماء شيء يعتد به إلا وقد ضمّناه كتابنا هذا؛ فإن لم يوجد فى الموضوع الجارى بإثباته فيه العادة وجد فى موضع آخر رأيت أنه أليق به؛ وقد أضفت إلى ذلك مما أدركته بفكرى، وحصلته بنظرى، وخصوصا فى علم الطبيعة وما بعدها، وفى علم المنطق. وقد جرت العادة بأن تطول مبادئ المنطق بأشياء ليست منطقية، وإنما هى للصناعة الحكمية، أعنى الفلسفة الأولى، فتجنبت إيراد شيء من ذلك، وإضاعة الزمان به، وأخرته إلى موضعه.

Our aim in this book —which we hope time will permit us to complete, with God’s blessing in its composition— is to make it encompass what we have ascertained as true among the teachings ascribed to the ancients. It is to be construed in an ordered and critical rationale, with principles derived from insights that assist understanding the truth that required effort over a long time to grasp. In the end we hope to produce a collection that will win the agreement of most minds, and will chase away the shades of distorted thought.

I have strived to compose it with the best craftsmanship, and in every discussion to point out what is problematic and solve it by showing the truth as best I can. I include subsidiary topics with the discussion of their principles, unless I am confident that the reader can discover them by examining what we explained and is sure of what he understands, or unless I omit it by mistake or distraction. I avoid lengthy discussion of the contradictions found in movements that are obviously erroneous, or not worth the effort after having settled the question in the discussion of principles and having made it known by established axioms.

There is nothing significant in the books of the ancients that we have not included in this book of ours. If something is not in its

usual place, I have put it in another place where it fits better. I have added to the teaching of the ancients what I have discovered by my thinking or arrived at by my investigation, especially in the area of natural science, metaphysics and logic. It has been customary, in the introduction to logic, to include long discussions of things that do not belong to logic, but to the science of wisdom—that is, First Philosophy. I have avoided wasting time with any of that, but postponed it to its proper place.

ثم رأيت أن أتلو هذا الكتاب بكتاب آخر، أسميه «كتاب اللواحق»، يتم مع عمري، ويؤرخ بما يفرغ منه في كل سنة، يكون كالشرح لهذا الكتاب، وكتفريع الأصول فيه، وبسط الموجز من معانيه.

ولى كتاب غير هذين الكتابين، أوردت فيه الفلسفة على ما هي في الطبع، وعلى ما يوجبه الرأي الصريح الذي لا يراعى فيه جانب الشركاء في الصناعة، ولا يتقى فيه من شق عصاهم ما يتقى في غيره، وهو كتابي في «الفلسفة المشرقية». وأما هذا الكتاب فأكثر بسطا، وأشدّ مع الشركاء من المشائين مساعدة. ومن أراد الحق الذي لا مجمعة فيه، فعليه بطلب ذلك الكتاب، ومن أراد الحق على طريق فيه ترضّ ما إلى الشركاء وبسط كثير، وتلويح بما لو فطن له استغنى عن الكتاب الآخر، فعليه بهذا الكتاب.

Then I saw fit to follow this book with another book, which I called *The Appendix*, to be finished by the end of my life, recording what was accomplished each year, which would be like a commentary on this enterprise and would draw conclusions from its principles and expand sections that were too abbreviated.¹⁶

I have a third book where I expounded philosophy as it is in nature, as sound thought should proceed without paying attention to the stand of one's companions in this science, and without minding those whose staff is troublesome, as other books do. This is my *Eastern Philosophy*. This book is simpler, and is of

¹⁶ Ibrahim Madkour, in his introduction, says that Ibn-Sīnā never got around to writing such a book.

greater help to the Peripatetics. Whoever wishes indisputable truth should look for that book. Whoever wishes the truth in a way that may bruise his companions and is very simple, with allusions to things which, if he understood them, he would not need the other book, he should stay with this book.

ولما افتتحت هذا الكتاب ابتدأت بالمنطق، وتحريت أن أحاذى به ترتيب كتب صاحب المنطق، وأوردت في ذلك من الأسرار واللطائف ما تخلو عنه الكتب الموجودة.

ثم تلوته بالعلم الطبيعي، فلم يتفق لى في أكثر الأشياء محاذاة تصنيف المؤتمّ به في هذه الصناعة وتذاكيره.

ثم تلوته بالهندسة، فاختصرت كتاب الأسطقتات لأوقليدس اختصاراً لطيفاً، وحللت فيه الشبه واقتصرت عليه.

ثم أردفته باختصار كذلك لكتاب المجسطى في الهيئة يتضمن مع الاختصار بياناً وتفهيماً، وألحقت به من الزيادات بعد الفراغ منه ما وجب أن يعلم المتعلم حتى تتمّ به الصناعة، ويطابق فيه بين الأحكام الرصدية والقوانين الطبيعية.

ثم تلوته باختصار لطيف لكتاب المدخل في الحساب. ثم ختمت صناعة الرياضيين بعلم الموسيقى على الوجه الذي انكشف لى، مع بحث طويل، ونظر دقيق، على الاختصار.

ثم ختمت الكتاب بالعلم المنسوب إلى ما بعد الطبيعة على أقسامه ووجوهه، مشاراً فيه إلى جمل من علم الأخلاق والسياسات، إلى أن أصنّف فيها كتاباً جامعاً مفرداً.

وهذا الكتاب، وإن كان صغير الحجم، فهو كثير العلم، ويكاد لا يفوت متأمّله ومدبره أكثر الصناعة، إلى زيادات لم تجر العادة بسماعها من كتب أخرى؛ وأول الجمل التي فيه هو علم المنطق.

وقبل أن نشرع في علم المنطق، فنحن نشير إلى ماهية هذه العلوم إشارة موجزة، ليكون المتدبر لكتابنا هذا كالمطلع على جمل من الأغراض.

Embarking on this work, I began with logic. In this I took as a guide the order of books of the Master of logic (Aristotle), and I included in it secrets and interesting points not found in existing books.

I followed logic with natural science. There, for the most part, I did not see it fit to follow the order and observations of the Perfector (Aristotle) in this science.

I followed this with astronomy. I made a lucid summary of Euclid's *Elements*, solving difficulties in it. I added to this a summary of the book *Almagest* (Η Μεγάλη Σύνταξις) on astronomy, with explanations and clarifications. After finishing it, I added an appendix which students need to complete this science. It combines observational data with the principles of natural science.

I followed this with a lucid summary of the book *Introduction to Arithmetic* (of al-Kindī). Then I completed the science of mathematics with a treatise on music, according to my observations, with much research and detailed analysis, although in summary form.

I completed my project with the science known as Metaphysics, according to its divisions and headings, making reference in it to the sciences of Ethics and Politics, biding the time when I compose a separate complete book on the subjects.

This project, although short in volume, contains much knowledge. The reader or student should easily grasp most of it, along with the additional material not usually found in other books.

The first collection in it is the science of logic. Before treating this science, let us first briefly examine what all these sciences are, so that the student of our project may see it multiple objectives.

[الفصل الثاني] (ب) فصل في التنبيه على العلوم والمنطق

Section 2: A consideration of the [kinds of] sciences and of logic

فنعول: إنّ الغرض فى الفلسفة أن يوقف على حقائق الأشياء كلّها على قدر ما يمكن الإنسان أن يقف عليه. والأشياء الموجودة إما أشياء موجودة ليس وجودها باختيارنا وفعلنا، وإما أشياء وجودها باختيارنا وفعلنا.

ومعرفة الأمور التي من القسم الأول تسمى فلسفة نظرية، ومعرفة الأمور التي من القسم الثاني تسمى فلسفة عملية. والفلسفة النظرية إنما الغاية فيها تكميل النفس بأن تعلم فقط، والفلسفة العملية إنما الغاية فيها تكميل النفس، لا بأن تعلم فقط، بل بأن تعلم ما يعمل به فتعمل. فالنظرية غايتها اعتقاد رأى ليس بعمل، والعملية غايتها معرفة رأى هو فى عمل؛ فالنظرية أولى بأن تنسب إلى الرأى.

The aim of philosophy is to arrive at the reality of all things, to the extent that this is possible for man to do. Existing things either exist apart from our choice and action, or they exist as a result of our choice and action.

Knowledge of things of the first category is called speculative philosophy, while knowledge of things of the second category is called active philosophy. Speculative philosophy aims at perfecting the soul with knowledge only. But active philosophy aims at perfecting the soul not merely for knowledge, but to know how to apply knowledge to action.

The aim of speculative philosophy is to know something, apart from action. But the aim of active philosophy is to know what to do, while speculative philosophy befits the mind better.

والأشياء الموجودة فى الأعيان التي ليس وجودها باختيارنا وفعلنا هى بالقسمة الأولى على قسمين:

- أحدهما الأمور التي تخالط الحركة،
 - والثاني الأمور التي لا تخالط الحركة، مثل العقل والبارى.
- والأمور التي تخالط الحركة على ضربين:

- فإنها إما أن تكون لا وجود لها إلا بحيث يجوز أن تخالط الحركة، مثل الإنسانية والتربيع، وما شابه ذلك،
 - وإما أن يكون لها وجود من دون ذلك.
- فالموجودات التي لا وجود لها إلا بحيث يجوز عليها مخالطة الحركة على قسمين:
- فإنها إما أن تكون، لا فى القوام ولا فى الوهم، يصح عليها أن تجرّد عن مادة معيّنة، كصورة الإنسانية والفرسية،
 - وإما أن تكون يصح عليها ذلك فى الوهم دون القوام، مثل التربيع، فإنه لا يحوج تصوّره إلى أن يخص بنوع مادة، أو يلتفت إلى حال حركة.
- وأما الأمور التي يصح أن تخالط الحركة، ولها وجود دون ذلك، فهي مثل الهوية، والوحدة، والكثرة، والعليّة. فتكون الأمور التي يصح عليها أن تجرّد عن الحركة،
- إما أن تكون صحتها صحة الجواب،
 - وإما ألا تكون صحتها صحة الجواب، بل تكون بحيث لا يمتنع لها ذلك، مثل حال الوحدة، والهوية، والعليّة، والعدد الذي هو الكثرة. وهذه
 - فإما أن ينظر إليها من حيث هي، فلا يفارق ذلك النظر النظر إليها من حيث هي مجردة، فإنها تكون من جملة النظر الذي يكون فى الأشياء، لا من حيث هي فى مادة، إذ هي، من حيث هي هي، لا فى مادة؛
 - وإما أن ينظر إليها من حيث عرض لها عرض لا يكون فى الوجود إلا فى المادة. وهذا على قسمين:
 - إما أن يكون ذلك العرض لا يصح توهمه أن يكون إلا مع نسبة إلى المادة النوعية والحركة، مثل النظر فى الواحد، من حيث هو نار أو هواء، وفى الكثير، من حيث هو أسطقسات، وفى العلة، من حيث هي مثلا حرارة أو برودة، وفى الجوهر العقلى،

من حيث هو نفس، أى مبدأ حركة بدن، وإن كان يجوز مفارقتة بذاته.

- وإما أن يكون ذلك العرض- وإن كان لا يعرض إلا مع نسبة إلى مادة ومخالطة حركة- فإنه قد تتوهم أحواله وتستبان من غير نظر فى المادة المعينة والحركة النظر المذكور، مثل الجمع والتفريق، والضرب والقسمة، والتجذير والتكعيب، وسائر الأحوال التي تلحق العدد؛ فإنّ ذلك يلحق العدد وهو فى أوهام الناس، أو فى موجودات متحركة منقسمة متفرقة ومجمعة، ولكن تصوّر ذلك قد يتجرد تجردا ما حتى لا يحتاج فيه إلى تعيين مواد نوعية.

Existing individual things which do not exist by our choice and action (the first category) are of two kinds:

- First are the things that involve motion,
- the second are those which do not involve motion, such as the intellect and the creator.

Things that involve motion are of two kinds:

- First, those which cannot exist without the possibility of motion, such as humanity, quadrangle and the like
- Then, those which can exist without that.

For things which cannot exist without the possibility of motion are of two kinds:

- Either they cannot, both in reality and in the mind, be abstracted from definite matter, such as the form of a man or of a horse.
- Or it is possible for them in the mind, but not in reality, to be abstracted from definite matter, such as a quadrangle, for to have a concept of it, it is not necessary to have any specific matter, or to bring up the possibility of motion.

Things that allow the possibility of motion can have an existence apart from that, such as “thisness”, existence, multiplicity and causality. So things that can be abstracted from motion:

- either require motion to exist
- or do not, but can exist without it, such as unity, thisness, causality, and number which is plurality. As for these
- They can be looked at as they are, and that look does not go beyond their state of abstraction, for they are then considered not as they are in matter, although as they exist in matter.
- Or they can be viewed as as having an accidental which cannot exist unless in matter, and this in two ways:
- Either that accidental can be imagined as having a relationship to a specific kind of matter and motion, such as the consideration:
 - of one thing, in so far as it is fire or air,
 - or of many things, in so far as they are elements,
 - or of a cause as such, for example heat or cold,
 - or of an intellectual substance, in so far as it is a soul, that is, a principle of the motion of a body, even if it can be separate in its essence.
- Or that accidental can —even if it can only exist with a relationship to matter and involve motion— be imagined in its states and be explained without consideration of definite matter and motion, as was considered before, such as joining and separating, multiplying and dividing, square-root and squaring, and other states that affect number. For that affects number and be found in the human imagination, or in existing mobile things which can be divided, separated or joined. But to form a concept of that involves a certain amount of abstraction, so as not to require a specific kind of matter.

فأصناف العلوم

- إِمَّا أَنْ تَتَنَاوَلَ إِذْنَ اعْتِبَارِ الْمَوْجُودَاتِ، مِنْ حَيْثُ هِيَ فِي الْحَرَكَةِ تَصَوُّرًا وَقَوَامًا، وَتَتَعَلَّقُ بِمَوَادِّ مَخْصُوصَةِ الْأَنْوَاعِ،
- وَإِمَّا أَنْ تَتَنَاوَلَ اعْتِبَارِ الْمَوْجُودَاتِ، مِنْ حَيْثُ هِيَ مَفَارِقَةٌ لَتِلْكَ تَصَوُّرًا لَا قَوَامًا،
- وَإِمَّا أَنْ تَتَنَاوَلَ اعْتِبَارِ الْمَوْجُودَاتِ، مِنْ حَيْثُ هِيَ مَفَارِقَةٌ قَوَامًا وَتَصَوُّرًا.

فالقسم الأول من العلوم هو العلم الطبيعي. والقسم الثاني هو العلم الرياضى المحض، و علم العدد المشهور منه؛ وأما معرفة طبيعة العدد، من حيث هو عدد، فليس لذلك العلم. والقسم الثالث هو العلم الإلهي. وإذ الموجودات فى الطبع على هذه الأقسام الثلاثة، فالعلوم الفلسفية النظرية هى هذه.

وأما الفلسفة العملية: فإما أن تتعلق بتعليم الآراء التي تنتظم باستعمالها المشاركة الإنسانية العامة، وتعرف بتدبير المدينة، وتسمى علم السياسة؛ وإما أن يكون ذلك التعلق بما تنتظم به المشاركة الإنسانية الخاصة، وتعرف بتدبير المنزل؛ وإما أن يكون ذلك التعلق بما تنتظم به حال الشخص الواحد فى زكاء نفسه، ويسمى علم الأخلاق.

وجميع ذلك إنما تحقّق صحة جملته بالبرهان النظرى، وبالشهادة الشرعية، ويحقق تفصيله وتقديره بالشرعية الإلهية.

والغاية فى الفلسفة النظرية معرفة الحق، والغاية فى الفلسفة العملية معرفة الخير.

So the kinds of science:

- either express existing things along with motion both in our concept of them and in their real existence, involving matter of a specific species,
- or they express existing things separated from matter in our ideas, but not in reality,
- or they express existing things separated from matter both in their existence and in our ideas.

The first of these divisions of science is natural science, the second is pure mathematics and the science of number commonly understood. But knowledge of the nature of number as concrete number does not belong to that science. The third division is divine science. If things in nature fall within these three categories, then these are the speculative sciences.

As for active philosophy, it either is concerned with teaching ideas used for guiding human society in general, and it shows how to govern a city—in which case it is called Political Science, or it is concerned with guiding human society in particular, and it shows how to govern a family, or it is concerned with guiding the individual person in purifying himself, and is called Ethics.

The validity of any of these active sciences depends on rational proof, supported by the testimony of revealed law, and its details application likewise is validated by divinely revealed law.

The aim of speculative philosophy is to know the truth, while the aim of active philosophy is to know the good.

وماهيات الأشياء قد تكون في أعيان الأشياء، وقد تكون في التصور، فيكون لها اعتبارات ثلاثة:

- اعتبار الماهية بما هي تلك الماهية غير مضافة إلى أحد الوجودين وما يلحقها، من حيث هي كذلك؛
- واعتبار لها، من حيث هي في الأعيان، فيلحقها حينئذ أعراض تخص وجودها ذلك؛
- واعتبار لها، من حيث هي في التصور، فيلحقها حينئذ أعراض تخص وجودها ذلك، مثل الوضع والحمل، ومثل الكلية والجزئية في الحمل، والذاتية والعرضية في الحمل، وغير ذلك مما ستعلمه؛

فإنه ليس في الموجودات الخارجة ذاتية ولا عرضية حملا، ولا كون الشيء مبتدأ ولا كونه خيرا، ولا مقدمة ولا قياسا، ولا غير ذلك. وإذا أردنا أن نتفكر في الأشياء ونعلمها، فنحتاج ضرورة إلى أن ندخلها في التصور، فتعرض لها ضرورة الأحوال التي تكون في التصور، فنحتاج ضرورة إلى أن نعتبر الأحوال التي لها في التصور، وخصوصا ونحن نروم بالفكرة أن نستدرك المجهولات، وأن يكون ذلك من المعلومات. والأمور إنما تكون مجهولة بالقياس إلى الذهن لا محالة، وكذلك إنما تكون معلومة بالقياس إليه. والحال والعارض الذي يعرض لها حتى ننقل من معلومها إلى مجهولها،

هو حال وعارض يعرض لها فى التصور، وإن كان ما لها فى ذاتها أيضا موجودا مع ذلك، فمن الضرورة أن يكون لنا علم بهذه الأحوال، وأنها كم هى، وكيف هى، وكيف تعتبر فى هذا العارض.

ولأن هذا النظر ليس نظرا فى الأمور، من حيث هى موجودة أحد نحوى الوجودين المذكورين، بل من حيث ينفع فى إدراك أحوال ذينك الوجودين، فمن تكون الفلسفة عنده متناولة للبحث عن الأشياء، من حيث هى موجودة، ومتقسمة إلى الوجودين المذكورين، فلا يكون هذا العلم عنده جزءا من الفلسفة؛ ومن حيث هو نافع فى ذلك، فيكون عنده آلة فى الفلسفة؛ ومن تكون الفلسفة عنده متناولة لكل بحث نظرى، ومن كل وجه، يكون أيضا هذا عنده جزءا من الفلسفة، وآلة لسائر أجزاء الفلسفة. وسنزيد هذا شرحا فيما بعد.

The essences of things can be in the things themselves. They can also be in our minds. There they can be expressed in three ways:

- the essence as such, without reference to any existing thing and its real concomitants,
- the essence as it exists in individuals, in which case it is accompanied by its individual accidents.
- the essence as it is represented by a concept. In that case it has accidents specific to its mental status, such as being a subject or a predicate, universality and particularity of predication, essentiality and accidentality of predication, and such other things which you will come to know.

In the external world, there is no such thing as essential or accidental predication. Nor is anything a subject or a predicate, nor a premise or a syllogism, or any of the like. If we want to think of things and know them, then we must necessarily enter the mind, and there we necessarily meet mental conditions, and we must necessarily express these conditions, especially when we think and try to conclude what is not yet known and thereby make them known. Things are unknown, of course, only with respect to the mind, and are known only with respect to it. The accidental condition it has by concluding from the known to the unknown is an accidental condition found only in the mind, even

though the essence of the thing may have a real existence. So necessarily we must know those conditions, how many they are, how they are, and how we express them.

And since this speculation is not about things in so far as any of them exist either of the two ways mentioned above, but in so far as they help us to grasp the conditions of real things, and since philosophy, according to Aristotle, attempts to investigate things as they really are, and is divided according to the states of reality we have mentioned above, then this science cannot be a part of philosophy. But since it assists us in doing that, it is therefore an instrument of philosophy. And since philosophy, according to Aristotle, engages in all rational investigation, under any aspect, in this respect it is also, according to him, a part of philosophy. We will explain this more later on.

والمشاجرات التي تجرى فى مثل هذه المسألة فهى من الباطل ومن الفضول:

- أما من الباطل، فلأنه لا تتناقض بين القولين، فإنّ كل واحد منهما يعنى بالفلسفة معنى آخر؛
- وأما من الفضول، فإنّ الشغل بأمثال هذه الأشياء ليس مما يجدى نفعاً.

وهذا النوع من النظر هو المسمى علم المنطق، وهو النظر فى هذه الأمور المذكورة، من حيث يتأدى منها إلى إعلام المجهول، وما يعرض لها من حيث كذلك لا غير.

The disputes that arise in questions like this are futile and superfluous.

- They are futile because they do not put two opinions in opposition, for each of the two has a different meaning of philosophy.
- They are superfluous, because spending effort on these things is useless.

This kind of consideration is called the science of logic. It is a consideration of the things we mentioned, in so far as they help to

discover the unknown, and it is about things related to this purpose, and about nothing else.

[الفصل الثالث] (ج) فصل فى منفعة المنطق

Section 3: The usefulness of logic

لما كان استكمال الانسان- من جهة ما هو إنسان ذو عقل- على ما سيتضح ذلك فى موضعه، هو فى أن يعلم الحق لأجل نفسه، والخير لأجل العمل به واقتباسه، وكانت الفطرة الأولى والبدئية من الإنسان وحدهما قليلى المعونة على ذلك، وكان جِلّ ما يحصل له من ذلك إنما يحصل بالاكتساب، وكان هذا الاكتساب هو اكتساب المجهول، وكان مكسب المجهول هو المعلوم، وجب أن يكون الإنسان يبتدئ أولاً فيعلم أنه كيف يكون له اكتساب المجهول من المعلوم وكيف يكون حال المعلومات وانتظامها فى أنفسها، حتى تقيد العلم بالمجهول، أى حتى إذا ترتبت فى الذهن الترتب الواجب، فتقررت فيه صورة تلك المعلومات على الترتيب الواجب، انتقل الذهن منها إلى المجهول المطلوب فعلمه.

Since the perfection of man, in so far as he is a rational man — as will become clear in its proper place— is for him to know the truth for its own sake, and the good for the sake of acting with it and acquiring it, and since primal nature and human spontaneity alone are of little help towards that, and most of this comes to man by his acquiring it, and this is an acquisition of something unknown, while the unknown thing when it is acquired becomes known, therefore the first thing a man must begin with is to know how to acquire the unknown from the known, and what is the condition and internal order of what is known, so that it will help him to learn what is unknown. That occurs when it is arranged in his mind in the necessary order. When the concepts of known things are properly ordered, then his mind can move from them to the unknown he is looking for, and he then knows it.

وكما أن الشيء يعلم من جهين:

- أحدهما أن يتصور فقط حتى إذا كان له اسم فنطق به، تمثل معناه في الذهن، وإن لم يكن هناك صدق أو كذب، كما إذا قيل: إنسان، أو قيل: افعل كذا؛ فإنك إذا وقفت على معنى ما تخاطب به من ذلك، كنت تصورته.
- والثاني أن يكون مع التصور تصديق، فيكون إذا قيل لك مثلا: إن كلّ بياض عرض، لم يحصل لك من هذا تصور معنى هذا القول فقط، بل صدّقت أنه كذلك.

A thing can be known in two ways:

- one of them is by concept only, and if it has a name it can be spoken. Its meaning is represented in the mind, even without affirmation or negation, for example: “man” or “elephant”, or “do this”. For if you stop at a meaning and express that, you have a concept of it.
- the second is when the concept is accompanied by an affirmation, for example: “Everything white is an accidental.” In this case you are not merely expressing a concept, but have affirmed that it is such and such.

فأما إذا شككت أنه كذلك أو ليس كذلك، فقد تصورت ما يقال؛ فإنك لا تشك فيما لا تتصوره ولا تفهمه، ولكنك لم تصدق به بعد؛ وكل تصديق فيكون مع تصور، ولا ينعكس. والتصوير في مثل هذا المعنى يفيدك أن يحدث في الذهن صورة هذا التأليف، وما يؤلف منه كالبياض والعرض. والتصديق هو أن يحصل في الذهن نسبة هذه الصورة إلى الأشياء أنفسها أنها مطابقة لها، والتكذيب يخالف ذلك.

But if you doubt that it is so, or it is not so, then you already have a concept of what is said, for you do not doubt what you have no concept of or do not understand. But you have not yet made an affirmation. Every affirmation, therefore, includes a concept, but not vice-versa. The formation of a particular meaning assists you to have a concept of a particular combination in your mind, and a concept of the elements of which it is composed, such as “white” and “accidental”. But affirmation is the mind’s relating this

concept to real things, declaring that it conforms to them, while negation is the opposite.

كذلك الشيء يجهل من وجهين:

- أحدهما من جهة التصور،
- والثاني من جهة التصديق؛

فيكون كل واحد منهما لا يحصل معلوماً إلا بالكسب، ويكون كسب كل واحد منهما بمعلوم سابق متقدم، وبهيئة وصفة تكون لذلك المعلوم، لأجلها ينتقل الذهن من العلم بها إلى العلم بالمجهول. فها هنا شيء من شأنه أن يفيد العلم بالمجهول تصوّره، وشيء من شأنه أن يفيد العلم بالمجهول تصديقه.

ولم تجر العادة بأن يفرض للمعنى الجامع- من حيث علمه يفيد علم تصور شيء- اسم جامع، أو لم يبلغنا؛ لأنّ منه حدًا، ومنه رسماً، ومنه مثالاً، ومنه علامة، ومنه اسماً، على ما سيتضح لك، وليس لما يشترك فيه اسم عام جامع. وأما الشيء الذي يترتب أولاً معلوماً، ثم يعلم به غيره على سبيل التصديق، فإنّ ذلك الشيء يسمى- كيف كان- حجة؛ فمنه قياس، ومنه استقراء، ومنه تمثيل، ومنه أشياء أخرى.

Likewise something can be unknown in two ways:

- One of them is with respect to concept
- The other is with respect to affirmation.

Both the concept and the affirmation are only had by acquisition, and they are acquired by something known beforehand, when it is known in a certain format, so that the mind can move from knowing it to known what it did not know. So one step in acquiring knowledge of the unknown is to form a concept of it. The second step is to affirm it.

It is not customary for a general meaning—in so far as knowing it helps forming a concept of a thing—to require a general name, or it has not reach us. For it includes definition, symbol, representation, sign, and name, as will become clear to you. But

there is no general comprehensive name that covers all of these. But the thing which has the position of what is first known, and through it other things are known by way of affirmation, is called—in the widest sense—an argument. This includes syllogism, induction, argument from example, and other things.

فغاية علم المنطق أن يفيد الذهن معرفة هذين الشئيين فقط؛

- وهو أن يعرف الإنسان أنه كيف يجب أن يكون القول الموقع للتصور، حتى يكون معرفًا حقيقة ذات الشيء؛ وكيف يكون، حتى يكون دالا عليه، وإن لم يتوصل به إلى حقيقة ذاته؛ وكيف يكون فاسدا، مخيلا أنه يفعل ذلك، ولا يكون يفعل ذلك، ولم يكون كذلك، وما الفصول التي بينها؛

- وأيضا أن يعرف الإنسان أنه كيف يكون القول الموقع للتصديق، حتى يكون موقعا تصديقا يقينيا بالحقيقة لا يصح انتقاضه؛ وكيف يكون حتى يكون موقعا تصديقا يقارب اليقين؛ وكيف يكون بحيث يظن به أنه على إحدى الصورتين، ولا يكون كذلك، بل يكون باطلا فاسدا؛ وكيف يكون حتى يوقع عليه ظن وميل نفس وقناعة من غير تصديق جزم؛ وكيف يكون القول حتى يؤثر في النفس ما يؤثره التصديق والتكذيب من إقدام وامتناع، وانبساط وانقباض، لا من حيث يوقع تصديقا، بل من حيث يخيل، فكثير من الخيالات يفعل في هذا الباب فعل التصديق؛ فإنك إذا قلت للعسل إنه مرة مقبئة، نفرت الطبيعة عن تناوله مع تكذيب لذلك البتة، كما تنفر لو كان هناك تصديق، أو شبيه به قريب منه،

وما الفصول بينها؟ ولم كانت كذلك؟

The purpose of the science of logic is to help the mind know these two things only:

- what kind of speech duly represents a concept, so that it can make known the real essence of that thing, how it can point it out, even if it does not reach its real essence, and how speech can be corrupt, creating the impression that it is doing what

we said, but is not really doing it, and what is the difference between the two

- secondly what kind of speech duly represents an affirmation, so that it is certain of the truth and does not admit of contradiction, also how it can represent affirmation that approximates certitude, and how one can think his speech is in either of these states, but it is not so, but is false and corrupt, also how a person can have an opinion or inclination or satisfaction in a statement that is not a firm affirmation, and how speech can influence a soul in the same way as affirmation. and negation, and this by way of attraction or repelling, or of opening his heart or closing it, not through affirmation, but through imagination. For imagination, in such cases, often acts just like affirmation. For if you say that honey is bitter and causes vomiting, nature flees from tasting it, even though [the mind] denies this, just as you would flee from it if it you affirmed it to be true, or came to something similar or near to an affirmation.

What is the difference between these two, and why is it so?

وهذه الصناعة يحتاج متعلمها القاصد فيها قصد هذين الغرضين إلى مقدمات منها يتوصل إلى معرفة الغرضين؛ وهذه الصناعة هي المنطق. وقد يتفق للإنسان أن ينبعث في غريزته حدّ موقع للتصور، وحرّجّة موقعة للتصديق، إلا أنّ ذلك يكون شيئاً غير صناعي، ولا يؤمن غلطه في غيره؛ فإنه لو كانت الغريزة والقريحة في ذلك مما يكفينا طلب الصناعة، كما في كثير من الأمور، لكان لا يعرض من الاختلاف والتناقض في المذاهب ما عرض، ولكان الإنسان الواحد لا يناقض نفسه وقتاً بعد وقت إذا اعتمد قريحته؛ بل الفطرة الإنسانية غير كافية في ذلك ما لم تكتسب الصناعة، كما أنها غير كافية في كثير من الأعمال الأخر، وإن كان يقع له في بعضها إصابة كرمية من غير رام. وليس أيضاً إذا حصلت له الصناعة بالمبلغ الذي للإنسان أن يحصل له منها كانت كافية من كل وجه، حتى لا يغلط البتة؛ إذ الصناعة قد يذهب عنها ويقع العدول عن استعمالها في

كثير من الأحوال، لا أنّ الصناعة في نفسها غير ضابطة، وغير صادة عن الغلط، لكنه يعرض هناك أمور:

- أحدها من جهة أن يكون الصانع لم يستوف الصناعة بكمالها؛
- والثاني أن يكون قد استوفاهما، لكنه في بعض المواضع أهملها، واكتفى بالقريحة؛
- والثالث أنه قد يعرض له كثيرا أن يعجز عن استعمالها، أو يذهب عنها. على أنه وإن كان كذلك، فإنّ صاحب العلم، إذا كان صاحب الصناعة واستعملها، لم يكن ما يقع له من السهو مثل ما يقع لعدمها؛ ومع ذلك فإنه إذا عاود فعلا من أفعال صناعته مرارا كثيرة تمكّن من تدارك إهمال، إن كان وقع منه فيه؛ لأن صاحب الصناعة، إذا أفسد عمله مرة أو مرارا، تمكن من الاستصلاح، إلا أن يكون متناهيا في البلادة؛ فإذا كان كذلك فلا يقع له السهو في مهمات صناعته التي تعينه المعاودة فيها، وإن وقع له سهو في نوافلها. وللإنسان في معتقداته أمور مهمة جدا، وأمور تليها في الاهتمام. فصاحب صناعة المنطق يتأتى له أن يجتهد في تأكيد الأمر في تلك المهمات بمراجعات عرض عمله على قانونه. والمراجعات الصناعية فقد يبلغ بها أمان من الغلط، كمن يجمع تفاصيل حساب واحد مرارا للاستظهار، فتزول عنه الشبهة في عقد الجملة.

The student of this science who aims at these two goals needs preambles to arrive at knowledge of these goals, and this science is logic. A man can happen to have stirred up in his instinctive nature a definition leading to a concept and an argument leading to an affirmation. But that is not by way of science, nor is it immune from error in another matter. For if instinct and primal nature were sufficient in our quest for science, as it is sufficient in many other matters, there would be no difference of opinion or contradictions between different schools of thought. One man may not contradict himself time after time if he depends on his primal nature, but human nature is insufficient to avoid error without acquiring the science, just as it is insufficient in many other works, even though in some things he may happen to

stumble upon something good without aiming. And if he acquired the science to the extent that man can acquire it, it would not be sufficient for him in every respect so as to keep him from all error, since he can move away from it and be mediocre in using it in many circumstances. This does not mean that the science itself is uncertain and immune from error, but certain things may happen:

- One is that the man had not completely mastered the science
- The second is that he mastered it, but in certain areas he ignored it and relied on instinct
- The third is that many things intervened to prevent him from using the science to to distract him from it. Nevertheless, even if this happens, the master of a science, if he is one and uses it, does not perform worse because of distraction than he would if he totally lacked the science. For if a master of a science finds his knowledge incapacitated one time or another, he can repair it, unless he is extremely stupid. If he repairs it, then he does not get distracted in the important matters of his science which he must be accustomed to, even though he may make mistakes in secondary matters. For among the things a man knows, some are very important to him, and these are uppermost in his mind. And the master of the science of logic takes it upon himself to put special effort into making sure of the important matters by the repetitions which his work demands. Repeated attention to scientific matters insures immunity from error, just as one who repeats the the details of one calculation many times to make sure, and by the agreement of the results doubt is removed.

فهذه الصناعة لا بد منها فى استكمال الإنسان الذي لم يؤيد بخاصية تكفيه الكسب. ونسبة هذه الصناعة إلى الروية الباطنة التي تسمى النطق الداخلى، كنسبة النحو إلى العبارة الظاهرة التي تسمى النطق الخارجى، وكنسبة العروض إلى الشعر؛ لكن العروض ليس ينفع كثيرا فى قرض الشعر، بل الذوق السليم يغنى عنه، والنحو العربى قد تغنى عنه أيضا الفطرة البدوية، وأما هذه الصناعة فلا غنى عنها

للإنسان المكتسب للعلم بالنظر والروية، إلا أن يكون إنسانا مؤيدا من عند الله، فتكون نسبته إلى المرويين نسبة البدوي إلى المتعربين.

This science is indispensable for man, since he has not been endowed with a natural ability which dispenses him from acquiring it. The relationship of this science to the inner rumination which is called inward speech, is like the relationship between grammar and its outward expression, which is called outer speech. And it is like the relationship between meters and poetry, although meters are not of much help in making poetry, but sound taste and Arabic grammar make up for it, as well as a Beduin nature. But nothing can make up for this science if a man wishes to acquire speculative knowledge and reflection, unless the man is anointed by God. So his relationship to those who reflect is like the relationship of a Beduin to those who learned Arabic.

[الفصل الرابع] (د) فصل في موضوع المنطق

Section 4: The subject of logic

ليس يمكن أن ينتقل الذهن من معنى واحد مفرد إلى تصديق شيء؛ فإن ذلك المعنى ليس حكم وجوده وعدمه حكما واحدا في إيقاع ذلك التصديق؛ فإنه إن كان التصديق يقع، سواء فرض المعنى موجودا أو معدوما، فليس للمعنى مدخل في إيقاع التصديق بوجه؛ لأن موقع التصديق هو علة التصديق، وليس يجوز أن يكون شيء علة لشيء في حالتي عدمه ووجوده. فإذا لم يقع بالمفرد

يقع بالمفرد كفاية من غير تحصيل وجوده، أو عدمه في ذاته، أو في حاله، لم يكن مؤيدا إلى التصديق بغيره؛ وإذا قرنت بالمعنى وجودا أو عدما فقد أضفت إليه معنى آخر.

The mind cannot move from one singular meaning to the affirmation of something, for the fact of that meaning's existence or non-existence does not cause that affirmation. For, if there is an affirmation, whether the meaning exists or does not exist, the meaning is no ground whatsoever for causing an affirmation. For what makes an affirmation is the cause of the affirmation, and

something cannot be the cause of another in the conditions of its non-existence or existence. Therefore affirmation cannot be about a singular meaning.

The singular stands alone without implying its existence or non-existence, whether essentially or accidentally—as would be required in an affirmation. But if you attach existence or non-existence to the meaning, then you have added another meaning.

وأما التصور فإنه كثيرا ما يقع بمعنى مفرد، وذلك كما سيتضح لك في موضعه، وذلك في قليل من الأشياء؛ ومع ذلك فهو في أكثر الأمر ناقص ردىء؛ بل الموقع للتصور في أكثر الأشياء معان مؤلفة، وكل تأليف فإنما يؤلف من أمور كثيرة، وكل أشياء كثيرة ففيها أشياء واحدة، ففي كل تأليف أشياء واحدة. والواحد في كل مركب هو الذي يسمى بسيطا؛ ولما كان الشيء المؤلف من عدة أشياء يستحيل أن تعرف طبيعته مع الجهل ببسائطه، فبالحرى أن يكون العلم بالمفردات قبل العلم بالمؤلفات. والعلم بالمفردات يكون على وجهين: لأنه

- إما أن يكون علما بها، من حيث هي مستعدة لأن يؤلف منها التأليف المذكور،
- وإما أن يكون علما بها، من حيث هي طبائع وأمر يعرض لها ذلك المعنى.

But forming a concept often takes place with a singular meaning, as will be made clear in its proper place. That happens in the minority of cases. Even so, it is mostly defective and bad. But what causes an affirmation in the majority of cases are combined meanings. Every combination is made of many things, and wherever there are many things there is one thing in them, and in every combination there is one thing. For the one in any compound is called simple. And since the nature of something made up of many things cannot be known without knowing its simple elements, *a fortiori* the knowledge of singular things comes before the knowledge of combined ones. So knowledge of singulars is of two kinds:

- either they are known in so far as they are ready to form the kind of combination we mentioned
- or they are known in so far as they are natures and things that happen to have a particular meaning.

ومثال هذا أنّ البيت الذي يؤلف من خشب وغيره يحتاج مؤلفه إلى أن يعرف بسائط البيت من الخشب واللبن والطين؛ لكنّ للخشب واللبن والطين أحوالا بسببها تصلح للبيت وللتأليف، وأحوالا أخرى خارجة من ذلك. فأما أنّ الخشب هو من جوهر فيه نفس نباتية، وأنّ طبيعته حارة أو باردة، أو أنّ قياسه من الموجودات قياس كذا، فهذا لا يحتاج إليه باني البيت أن يعلمه؛ وأما أنّ الخشب صلب ورخو، وصحيح ومتسوس، وغير ذلك، فإنه مما يحتاج باني البيت إلى أن يعلمه.

An example of that is a house which is made up of wood and other things. The one who puts them together must know the elements of the house, such as wood and bricks and mud. But the wood, the bricks and the mud have qualities which qualify it for the house and the composition, and other qualities besides those. The fact that wood is from a substance which has plant life, and that its nature is hot or cold, or it has such and such a relations to other existing things, is not necessary for the builder of the house to know. All he needs to know is that wood is hard and malleable, of good quality and shape etc., for that is what the builder of a house needs to know.

وكذلك صناعة المنطق فإنها ليست تنظر في مفردات هذه الأمور، من حيث هي على أحد نحوى الوجود الذي في الأعيان والذي في الأذهان، ولا أيضا في ماهيات الأشياء، من حيث هي ماهيات، بل من حيث هي محمولات وموضوعات وكليات وجزئيات، وغير ذلك مما إنما يعرض لهذه المعانى من جهة ما قلناه فيما سلف.

Similarly, the science of logic does not examine these individual things in so far as they are either existing in themselves or existing in the mind. Nor does it examine the essences of things as essences, but only in so far as they are subjects or predicates,

universal or particular etc., qualifying these meanings in the way we explained above.

وأما النظر في الألفاظ فهو أمر تدعو إليه الضرورة، وليس للمنطقي- من حيث هو منطقي- شغل أول بالألفاظ إلا من جهة المخاطبة والمحاورة. ولو أمكن أن يتعلم المنطق بفكرة ساذجة، إنما تلحظ فيها المعاني وحدها، لكان ذلك كافياً؛ ولو أمكن أن يطلع المحاور فيه على ما في نفسه بحيلة أخرى، لكان يغنى عن اللفظ البتة. ولكن لما كانت الضرورة تدعو إلى استعمال الألفاظ، وخصوصاً ومن المتعذر على الروية أن ترتب المعاني من غير أن تتخيل معها ألفاظها، بل تكاد تكون الروية مناجاة من الإنسان ذهنه بألفاظ متخيلة، لزم أن تكون للألفاظ أحوال مختلفة تختلف لأجلها أحوال ما يطابقها في النفس من المعاني حتى يصير لها أحكام لو لا الألفاظ لم تكن، فاضطرت صناعة المنطق إلى أن يصير بعض أجزاءها نظراً في أحوال الألفاظ؛ ولو لا ما قلناه لما احتاجت أيضاً إلى أن يكون لها هذا الجزء. ومع هذه الضرورة، فإن الكلام على الألفاظ المطابقة لمعانيها كالكلام على معانيها، إلا أن وضع الألفاظ أحسن عملاً.

The study of vocabulary is necessary, but it is not the primary business of logic. It pertains to logic only from the aspect of rhetoric and dialectics. If it were possible to learn logic with clear thinking and attention to the meanings alone, that would be sufficient. And if the speaker could look at what he has in mind by some other means, he could dispense from words altogether. But, since it is necessary to resort to words, and especially since it is impossible to think and put meanings together without imagining words along with them, and thinking seems to be talking to oneself in imagined words, therefore words must have different states which correspond to different states of meanings in the soul, and these meanings would have certain characteristics even if words were not there. Therefore the science of logic must have some sections which deal with the states of words. If it were not for what we have pointed out, logic would not need such a section. Because of this necessity, speaking about the words

that match meanings is like speaking about the meanings themselves, while the arrangement of words improves the job.

وأما فيما سوى ذلك، فلا خير في قول من يقول إنّ المنطق موضوعه النظر في الألفاظ، من حيث تدل على المعاني، وإنّ المنطقى إنما صناعته أن يتكلم على الألفاظ، من حيث تدل على المعاني؛ بل يجب أن يتصور أنّ الأمر على النحو الذي ذكرناه. وإنما تبتد في هذا من تبتد، وتشوش من تشوش، بسبب أنهم لم يحصلوا بالحقيقة موضوع المنطق، والصنف من الموجودات الذي يختص به، إذ وجدوا الموجود على نحوين:

- وجود الأشياء من خارج،
- ووجودها في الذهن؛

فجعلوا النظر في الوجود الذي من خارج لصناعة أو صناعات فلسفية، والنظر في الوجود الذي في الذهن وأنه كيف يتصور فيه لصناعة أو جزء صناعة؛ ولم يفصلوا فيعلموا أنّ الأمور التي في الذهن إمّا أمور تصوّرت في الذهن مستفادة من خارج، وإمّا أمور تعرض لها، من حيث هي في الذهن لا يحادى بها أمر من خارج. فتكون معرفة هذين الأمرين لصناعة، ثم يصير أحد هذين الأمرين موضوعا لصناعة المنطق من جهة عرض يعرض له. وأمّا أي هذين الأمرين ذلك، فهو القسم الثاني؛ وأمّا أي عارض يعرض، فهو أنه يصير موصلا إلى أن تحصل في النفس صورة أخرى عقلية لم تكن، أو نافعا في ذلك الوصول، أو ما يعاوق ذلك الوصول.

Apart from that, there is no validity in the statement that “the subject of logic is the study of words in so far as they refer to meanings”, or that “the work of a logician is to speak about words in so far as they refer to meanings”. But this question must be answered in the way we said above. They substitute what they want, and confuse the matter as they want, because they never ascertained the real subject of logic, and the type of beings it is concerned with, since beings are of two kinds:

- those which exist externally

- and those which exist in the mind.

They put the study of external existence in one or another of the philosophical sciences, and the study of existence in the mind and how it is conceived in an science or a part of an science. They do not distinguish, but teach that things in the mind are merely what is formed in the mind from the outside, together with mental constructs which do not come from the outside. They place both of these in one science, and say that one of them belongs to logic under the aspect of the [mental] accidentals it happens to have. — But which of these two things is it? It is the second kind. But any accidental that comes along is only to pave way for another intellectual form in the soul which was not there before. It either helps the realization of that form or impedes it.

فلما لم يتميز لهؤلاء بالحقيقة موضوع صناعة المنطق، ولا الجهة التي بها هي موضوعه، تتعتعوا وتبلدوا؛ وأنت ستعلم بعد هذا، بوجه أشد شرحاً، أنّ لكل صناعة نظرية موضوعاً، وأنها إنما تبحث عن أعراضه وأحواله، وتعلم أنّ النظر في ذات الموضوع قد يكون في صناعة، والنظر في عوارضه يكون من صناعة أخرى. فهكذا يجب أن تعلم من حال المنطق.

Because they did not distinguish these matters according to the real subject of the science of logic, or see under what aspect they fit into its subject, they became confused and altered [the subject]. You will see later on, in a more detailed commentary, that each speculative science has a subject, and that the science investigates that subject's properties and states. You will also see that the study of the essence of a subject may belong to one science, and the study of its properties belong to another. You should know this when it comes to speaking about logic.

CHAPTER III

THOMAS AQUINAS ON METAPHYSICS AND LOGIC (Commentary on Aristotle's *Metaphysics*, Book 4, Lesson 4)¹⁷

4. Conveniunt autem in hoc, quod dialectici est considerare de omnibus. Hoc autem esse non posset, nisi consideraret omnia secundum quod in aliquo uno conveniunt: quia unius scientiae unum subiectum est, et unius artis una est materia, circa quam operatur. Cum igitur omnes res non conveniant nisi in ente, manifestum est quod dialecticae materia est ens, et ea quae sunt entis, de quibus etiam philosophus considerat. Similiter etiam sophistica habet quamdam similitudinem philosophiae. Nam sophistica est visa sive apparens sapientia, non existens. Quod autem habet apparentiam alicuius rei, oportet quod aliquam similitudinem cum illa habeat. Et ideo oportet quod eadem consideret philosophus, dialecticus et sophista.

4. *Dialectics* resembles philosophy in that it is also the office of the dialectician to consider **all things**. But this could not be the case unless he considered all things insofar as they agree in some one respect; because each science has one subject, and each art has one matter on which it operates. Therefore, since all things agree only in being, evidently the subject matter of dialectics is being and those attributes which belong to being; and this is what the philosopher also investigates. And *sophistry* likewise resembles philosophy; for sophistry has “the semblance of wisdom,” or is **apparent wisdom**, without being wisdom. Now anything that takes on the appearance of something else must resemble it in some way. Therefore the philosopher, the dialectician and the sophist must consider the same thing.

5. Differunt autem abinvicem. Philosophus quidem a dialectico secundum potestatem. Nam maioris virtutis est consideratio philosophi quam consideratio dialectici. Philosophus enim de

¹⁷ The text is from the Leonine edition, available on line at <http://www.unav.es/filosofia/alarcon/>. The translation is that by translated by John P. Rowan (Chicago, 1961), with my own points of emphasis.

praedictis communibus procedit demonstrative. Et ideo eius est habere scientiam de praedictis, et est cognoscitivus eorum per certitudinem. Nam certa cognitio sive scientia est effectus demonstrationis. Dialecticus autem circa omnia praedicta procedit ex probabilibus; unde non facit scientiam, sed quamdam opinionem. Et hoc ideo est, quia ens est duplex: ens scilicet rationis et ens naturae. Ens autem rationis dicitur proprie de illis intentionibus, quas ratio adinvenit in rebus consideratis; sicut intentio generis, speciei et similium, quae quidem non inveniuntur in rerum natura, sed considerationem rationis consequuntur. Et huiusmodi, scilicet ens rationis, est proprie subiectum logicae. Huiusmodi autem intentiones intelligibiles, entibus naturae aequiparantur, eo quod omnia entia naturae sub consideratione rationis cadunt. Et ideo subiectum logicae ad omnia se extendit, de quibus ens naturae praedicatur. Unde concludit, quod subiectum logicae aequiparatur subiecto philosophiae, quod est ens naturae.

Philosophus igitur ex principiis ipsius procedit ad probandum ea quae sunt considerata circa huiusmodi communia accidentia entis. Dialecticus autem procedit ad ea considerata ex intentionibus rationis, quae sunt extranea a natura rerum. Et ideo dicitur, quod dialectica est tentativa, quia tentare proprium est ex principiis extraneis procedere.

5. Yet they **differ** from each other. The philosopher differs from the *dialectician* in power, because the consideration of the philosopher is more efficacious than that of the dialectician. For the philosopher proceeds demonstratively in dealing with the common attributes mentioned above, and thus it is proper to him to have scientific knowledge of these attributes. And he actually knows them with certitude, for certain or scientific knowledge is the effect of demonstration. The dialectician, however, proceeds to treat all of the above-mentioned common attributes from probable premises, and thus he does not acquire scientific knowledge of them but a kind of opinion. The reason for this difference is that there are two kinds of beings: **beings of reason** and real beings. The expression being of reason is applied properly to those notions which reason derives from the objects it

considers, for example, the notions of genus, species and the like, which are not found in reality but are a natural result of the consideration of reason. And this kind of being, i.e., being of reason, constitutes the proper subject of *logic*. But intellectual conceptions of this kind are equal in extension to real beings, because all real beings fall under the consideration of reason. Hence the subject of logic extends to all things to which the expression real being is applied. His conclusion is, then, that the subject of logic is equal in extension to the subject of philosophy, which is real being.

Now the **philosopher** proceeds from the principles of this kind of being to prove the things that have to be considered about the common accidents of this kind of being. But the **dialectician** proceeds to consider them from the conceptions of reason, which are extrinsic to reality. Hence it is said that dialectics is in search of knowledge, because in searching it is proper to proceed from extrinsic principles.

6. A sophista vero differt philosophus prohaeresi, idest electione vel voluptate, idest desiderio vitae. Ad aliud enim ordinat vitam suam et actiones philosophus et sophista. Philosophus quidem ad sciendum veritatem; sophista vero ad hoc quod videatur scire quamvis nesciat.

6. But the philosopher differs from the *sophist* “in the choice,” i.e., in the selection or willing, or in the desire, of a way of life. For the philosopher and sophist direct their life and actions to different things. The philosopher directs his to knowing the **truth**, whereas the sophist directs his so as to **appear** to know what he does not.

7. Licet autem dicatur, quod philosophia est scientia, non autem dialectica et sophistica, non tamen per hoc removetur quin dialectica et sophistica sint scientiae. Dialectica enim potest considerari secundum quod est docens, et secundum quod est utens. Secundum quidem quod est docens, habet considerationem de istis intentionibus, instituens modum, quo per eas procedi possit ad conclusiones in singulis scientiis probabiliter ostendendas; et hoc demonstrative facit, et secundum hoc est

scientia. Utens vero est secundum quod modo adinvento utitur ad concludendum aliquid probabiliter in singulis scientiis; et sic recedit a modo scientiae.

Et similiter dicendum est de *sophistica*; quia prout est docens tradit per necessarias et demonstrativas rationes modum arguendi apparenter. Secundum vero quod est utens, deficit a processu verae argumentationis.

7. Now although it is said that philosophy is scientific knowledge, and that dialectics and sophistry are not, this still does not do away with the possibility of dialectics and sophistry being sciences. For *dialectics* can be considered both from the viewpoint of theory and from that of practice. (1) From the viewpoint of **theory** it studies these conceptions and establishes the method by which one proceeds from them to demonstrate with probability the conclusions of the particular sciences; and it does this demonstratively, and to this extent it is a science. (2) But from the viewpoint of **practice** it makes use of the above method so as to reach certain probable conclusions in the particular sciences; and in this respect it falls short of the scientific method.

The same must be said of *sophistry*, because from the viewpoint of **theory** it treats by means of necessary and demonstrative arguments the method of arguing to apparent truth. From the viewpoint of **practice**, however, it falls short of the process of true argumentation.

8. Sed in parte logicae quae dicitur demonstrativa, solum doctrina pertinet ad logicam, usus vero ad philosophiam et ad alias particulares scientias quae sunt de rebus naturae. Et hoc ideo, quia usus demonstrativae consistit in utendo principiis rerum, de quibus fit demonstratio, quae ad scientias reales pertinet, non utendo intentionibus logicis.

Et sic apparet, quod quaedam partes logicae habent ipsam scientiam et doctrinam et usum, sicut dialectica tentativa et *sophistica*; quaedam autem doctrinam et non usum, sicut demonstrativa.

8. But that part of logic which is said to be *demonstrative* is concerned only with **theory**, and the **practical** application of it belongs to philosophy and to the other particular sciences, which are concerned with real beings. This is because the practical aspect of the demonstrative part of logic consists in using the principles of things, from which proceeds demonstration (which properly belongs to the sciences that deal with real beings), and not in using the conceptions of logic.

Thus it appears that some parts of logic are at the same time scientific, theoretical, and practical, as exploratory dialectics and sophistry; and one is concerned with theory and not practice, namely, demonstrative logic.

CONCLUSION

For Aristotle, Ibn-Sīnā and Benedict Ashley, formal logic, corresponding to the first three books of Aristotle's *Organon*, is merely instrumental to applied logic, which dealt with the real world of science, politics and art.

Their thinking is characterized by a practical realism, one which recognized the possibility of demonstration in some matters, the conditions of which they carefully define.

They recognized also that in many or most matters we cannot have absolute certainty, but only probable knowledge, which can be educated through research into greater and greater probability, and possibly one day certitude. This is the domain of dialectics, a propaedeutic to science.

For all three, understanding of the world, through natural science, leads to an understanding of God, and positions metaphysics at the apex of an educational curriculum.

Next in dignity comes understanding of human society, the practical knowledge of how to organize it and promote the happiness of the people, consisting in moral and intellectual virtue. This belongs to moral and political science. But its practical realization is done primarily by rhetoric, the instrument of persuasion and social mobilization.

Completing the circle, depicting man's quest for happiness through a struggle of virtue against vice on the stage of a world where God is a factor, is the art of drama, discussed under the term "poetics". It combines moral and social truth with truth about the world and God in the form of a story. Aristotle observes, as we have seen above, that poetry (drama) "is a more philosophical and a higher thing than history: for poetry tends to express the universal, history the particular." It enables the audience to contemplate moral beauty and truth in the concrete. It is a kind of "philosophy made simple" or "philosophy for the masses", although professional philosophers also enjoy it.

A number of historical factors, including Nominalism and Idealism, contributed to philosophers' abandonment of the branches of applied logic. Formal logic made great advances, but was devoid of application—that is, until computers came along. Here was a very happy match.

Otherwise, formal logic, under the sway of analytic philosophy, confuses grammar or linguistics with logic, and deals primarily with language games. Ibn-Sīnā, as we have seen, strongly opposed this trend. In this connection, note the insistence of John Deely that Semiotics (the science of signs) is a branch of logic, but its consideration of signs extends to physical signs.¹⁸

In the areas of applied logic, philosophers and logicians of science, such as Carnap and many others, were divorced from the world of hands-on science.

The world of communications made great strides over the last century, but has had little contact with formal logic or rhetoric of Aristotelian tradition.

Likewise the world of film and literature has made its own advances, cut off from traditional “poetics”.

All of these areas, I believe, could be enriched by reconnecting with the branches of traditional applied logic.

Such a reconnection could also give new birth and relevance to formal logic, which at present sits like a forlorn princess locked away in a castle with no suitor.

¹⁸ See John Deely and Ralph Powell, O.P., *Tractatus de signis: The semiotic of John Poincaré by John Poincaré* [John of St. Thomas, 1589-1644] (Berkeley: University of California Press, 1985), and John Deely, *Four ages of understanding* (Toronto: University of Toronto, 2001).

APPENDIX

BENEDICT ASHLEY'S PUBLICATIONS

A rough classification with some overlapping of categories

See http://en.wikipedia.org/wiki/Benedict_Ashley. But this list is more complete.

BIOETHICS

Books:

Health Care Ethics: A Theological Analysis (co-author with Kevin D. O'Rourke) 1st ed., 1977 St. Louis: Catholic Health Association; 4th, rev. ed., Washington, DC.

Georgetown University Press, 1997; in Italian translation. 1993. The 5th revised edition, 2006, Georgetown University Press.

Ethics of Health Care, Washington, DC., Georgetown University Press, 1986, a textbook version of *Health Care Ethics*.

Articles and Lectures:

"Roman Catholic Medical Ethics" in Sylvester D. Thorn, *The Faith of Your Patients: A Handbook of Religious Attitudes Toward Medical Practices* (Houston, 1972)

"Ethics of Experimenting with Persons" in *Research and the Psychiatric Patient*, J. Schoolar and C. Gaits, eds. (New York: Brunner/Mazel, 1975).

"The Religious Heritage of the Stewardship of Life: Perspective of a Moralist," in Donald G. McCarthy, Donald G., ed., *Responsible Stewardship of Human Life*, Inquiries into Medical Ethics II, The Institute of Religion and Human Development, Houston, Texas, St. Louis, the Catholic Hospital Association, 1976, pp. 35-42.

"A Critique of the Theory of Delayed Hominization," in D. G. McCarthy and A.S. Moraczewski, *An Ethical Evaluation of Fetal*

Experimentation (St. Louis, MO: Pope John Center, 1976). Appendix I, pp. 113-133.

“Problems in Medical Ethics” 5 video-taped cassette lectures commissioned by the Department of Health Affairs, Diocese of Lansing, Michigan, 1978.

“Ethical Assumptions in the Abortion Debate,” *Issues in Ethical Decision Making*, St. Louis, Pope John Center (no date).

“Pro-Life Evangelization,” *New Technologies of Birth and Death*, First Bishops Workshop, Dallas, TX, 1980 (St. Louis: Pope John, 1980), pp. 80-97.

“Principles for Moral Decisions about Prolonging Life” in D.G. McCarthy and A.S. Moraczewski, *Moral Responsibility in Prolonging Life Decisions* (St. Louis: Pope John Center, 1981): 116-123.

“Pro-Life Evangelization”, in *The New Technologies of Birth and Death*, (St. Louis: Pope John Center, 1982), pp. 80-97.

“Genetic Engineering,” Annual Thomist Colloquium, Washington, 1986 (unpublished).

“How the Roman Catholic Position on Euthanasia Developed,” Official Methodist-Catholic Dialogue, 1987 (unpublished).

“Dialogue with William E. May on ‘Normal Care,’ held at Providence Hospital, Washington, DC. 1992, (unpublished).

“Financial Burdens and the Obligation of Sustaining Life” and “Hydration and Nutrition: Ethical Obligations” in *Reproductive Technologies, Marriage, and the Church* (Braintree, MA: Pope John Center, 1987) pp.113-118, and pp. 159-165.

“A Christian Perspective on Scientific Medicine”, keynote address for *Giornate di studio e di riflessione in occasione del 120 Anniversario della fondazione dell’ Ospedale Pediatrico Bambino Gesù*, Rome Nov. 28-29, 1989 (not published).

"The Relevance of Ethics to Health Care," Annual National Conference of the Catholic Health Association of Canada, Victoria, British Columbia, May 16, 1990 (not published).

"Moral Inconsistency and Fruitful Public Debate," *Ethics and Medics*, Vol. 17, n. 4 (April, 1992).

"Dominion or Stewardship", a paper delivered at the International Study Group in Bioethics, International Federation of Catholic Universities, Brussels, March 29-31, 1990 in Kevin M. Wildes, S.J., Francesco Abel, S.J., and John C. Harvey, eds., *Birth, Suffering and Death: Catholic Perspectives at the Edge of Life*, Philosophy and Medicine 41, Catholic Studies in Bioethics 1 (Dordrecht/Boston/London: Kluwer Academic Publishers, 1992), pp. 85-106.

(With Albert S. Moraczewski, O.P.) "Is the Biological Subject of Human Rights Present From Conception?" in Peter J. Cataldo and Albert S. Moraczewski, O.P., eds., *The Fetal Tissue Issue: Medical and Ethical Aspects* (Braintree, MA: Pope John Center, 1994).

Does 'The Splendor of Truth' Shine on Bioethics?. *Ethics and Medics*, vol, 19, (Jan, 1994): 3-4.

"Health Care Ethics," in *Encyclopedia of U.S. Biomedical Policy*, eds. in chief, Robert H. Blank and Janna C. Merrick, (Westport, CT: Greenwood Press, 1996) pp. 119-121

"Anthropological and Ethical Aspects of Embryo Manipulation" (Unpublished)

"The Current Revival of the Sense of Moral Obligation: Autonomy and the Common Good" In *The Bishop and the Future of Catholic Health Care: Challenges and Opportunities* Sixteenth Workshop for Bishops, Celebrating 25 years of the Pope John Center, Daniele P. Maher, ed. Dallas, TX, 1997 (Boston MA: Pope John Center, 1997) , pp. 93-108

"Observations on the Document of the NCCB 'Moral Principles Concerning Anencephaly,'" English Weekly Ed. of

L'Osservatore Romano, Weekly English Edition, n. 38, 23 Sept., 1998, pp. 8-10.

“Designer Babies or Gifts of God?” *NaProEthics* (to be published).

(With Albert Moraczewski) “Cloning, Aquinas, and the Embryonic Person,” *The National Catholic Bioethics Quarterly*, 1, (2) 2001, pp. 189-202.

“Organ Donation and Implantation,” in Kevin T. McMahan, ed., *Moral Issues in Catholic Health Care*, Symposium sponsored by the John Cardinal Krol Chair of Moral Theology, Wynnewood, PN, April 19-21. (Saint Charles Borromeo Seminary, Overbrook, MA, 2004), pp. 1-18.

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Translation by Suzanne Noffke, O.P. of Catherine of Siena: Dialogue, Classics of Western Spirituality, *Spirituality Today*, March, 1980, pp. 69-70.

Richard A. McAllister, *Thomas McGlynn: Priest and Sculptor*, *Spirituality Today*, June, 1982, pp. 187-189.

Simon Tugwell, O.P., *The Early Dominicans*, *Spirituality Today*, June, 1982, pp. 166-168.

Jordan of Saxony, On the Beginnings of the Order of Preachers, ed and trans by Simon Tugwell, O.P., *Spirituality Today*, Summer 1983, pp. 175-177.

Richard Woods, O.P., Eckhart's Way, vol. 2 The Way of the Mystics (Wilmington, DL,: Michael Glazier, 1986) in *Spirituality Today*, Winter 1987, pp. 371-373.

Art and the Word of God (Arte e la Parola di Dio): A Study of Angelico Rinaldo Zarlenga, O.P., *edited by Vincent I. Zarlenga, O.P., text in English and Italian. (River Forest, IL: Fra Angelico Art Foundation)*, *The Thomist*, 58, Jan, 1994, pp. 164-166.

UNPUBLISHED BOOKS

1) *Friars Folly*, an autobiography, which the University of Notre Dame Press seriously considered publishing but then found too long. Consequently I have divided it into three volumes of about 250 pp each that have different titles and themes and could be published separately, although I would prefer they be published by a single press:

Atheism Bumps into Reality: A Conversion Story. This deals with my becoming a Catholic and has much about my time at the Universities of Chicago and Notre Dame where I knew a number of notable, literary people

Completing Vatican II on Science, Education, and Health. This deals with my professional career in which as an educator and an advisor to the NCCB, I experience the struggle in the Church over the changes produced by Vatican II.

Keeping Vigil: The Spirituality of Aging. I am now 95 and have a good many thoughts about this problem.

2). *The Book of the Strong Woman*. a translation from Latin of a work attributed to St. Albert the Great, co-authored with Dominic Holtz OP. This work of Albert's is a Commentary on Proverbs 31:10-3. Little of St. Albert the Great, Patron of Scientists, has been translated. The Text section of the American Academy of Religion seriously

considered publishing this, and one of the editors of the Cologne critical edition reviewed it and encouraged us. They, however said that our introduction was not sufficiently developed. We are working on that now. It would be about 250 pages.

3) *Healing for Freedom: A Christian Approach to Psychology and Personhood*. I have a promise to publish this from the Institute for Psychological Sciences in Arlington, VA., but this is delayed.

4) *Doctrinal Preaching: Trinitarian and Narrative*, This is a textbook on preaching that takes up the currently debated issue of whether homilies should also give catechesis and how this should be done. It also follows the current concern about preaching God as Trinity and the use of narrative literary forms. It has been tested in class and I have sent it to Eerdmans Publishing that does both Protestant and Catholic books. —about 200 pages.

5) *A Marian Ecclesiology*. This is a book in ecclesiology that responds first of all to Vatican II's document *Lumen Gentium* that placed Mary as Mother of the Church and second to recent ecclesologists such Richard McBrien of Notre Dame who question whether Jesus really organized a Church or just started a "movement."

6) *Contemplation and Society* This is an up-to-date revision of an older MS that I had laid aside. Aristotle and Aquinas argue that the goal of human society is not power or making money etc. but "contemplation." Most people, however, think of contemplation as what lonely hermits in the desert do, not something social. In this book I show how the Dominican motto "Contemplate and then share what you have contemplated with others" is a fundamental political principle both at the levels of nature and of grace.

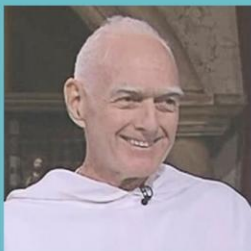
7) *God the Carpenter's Holy Family*. Will be about 100 pages in print.

8) *Why are the Fine Arts Fine?* Finished May 2012, details not yet available.

BOOKS IN PROGRESS

8) *Four Newest Things: Death, Hell, Purgatory, Heaven* It is a short work, about 100 pages in print and only needs editing.

9) *God Calls You, Me, Yes, Each and All*, on vocations, pamphlet size



Fr. Joseph Kenny, of the Order of Preachers, has worked in Nigeria since 1964, and is now a Nigerian citizen. He has a Licentiate in Philosophy from Aquinas Institute, 1960, then in River Forest, having studied under Benedict Ashley, Athanasius Weisheipl and other eminent Thomists of the River Forest school. He later specialized in Arabic and Islamic Studies (Ph.D. Edinburgh, 1970), and in recent years has focused on Islamic philosophy and Thomism. He was a Professor in the Department of Religious Studies, University of Ibadan, 1979-2001, and currently resides at the Priory of St. Thomas Aquinas, Ibadan, Nigeria. Most of his writings are available on his website: <http://www.josephkenny.joyeurs.com>.

ABOUT THE BOOK

The scope of logic takes inspiration from Benedict Ashley's lectures and writings, beginning with *The arts of learning and communication* (Dubuque: Priory Press, 1958). It maintains that logic, if it is a tool, is of value only in its applications. That is what most logic curricula lack.

In tracing the Aristotelian tradition through Ibn-Sīnā to Benedict Ashley, this book presents Ibn-Sīnā's own introduction to logic, both Arabic text and original translation.

It also presents the contemporary relevancy of this classical tradition to the wide spectrum of contemporary science, communications and fine arts.

An appendix, listing Benedict Ashley's writings, gives a glimpse of this great mind and teacher, who is still writing and publishing at the age of 97.