

Western and Byzantine Approaches to Logic¹

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1. East and West walking together.

First a basic fact. In the Greek as well as in the Latin world there was no choice at any time in the Middle Ages between Aristotelian and non-Aristotelian logic. New branches of logic could develop, but however un-Aristotelian they might be to an impartial observer, the medievals themselves considered them supplements to Aristotle's logic, not competing theories. The closest they ever got to the idea of a logic fundamentally different from Aristotle's was when they were thinking of the strange consequences of the strange notions of identity employed in Trinitarian and Christological dogma. You occasionally find theologians who think the solution is a special sort of theological logic whose rules will be inconsistent with those of Aristotelian logic.² But by and large, the medievals stuck to the late ancient compromise between Aristotelianism and Platonism, according to which everything in the sensible world can be treated with Aristotelian logic, and that this is also the only logic available for questions relating to supra-sensory reality, although it is bound to break down whenever we approach important questions about the divine.

Late ancient pagans treated logic as a hand-maiden of theology. It had no purpose in itself. But via an understanding of rational structures you could proceed in the direction of an understanding of the divine. There was in Antiquity a strong anti-logical current among Christians, and there continued to be one throughout the Middle Ages. Pious irrationalists could always find support in the Fathers if they wanted to warn against the pernicious effects of studying logic. However, by the end of Antiquity the Christian mainstream had taken over the pagan understanding of the function of logic.

The logic that the Christian Age inherited was not a very thriving one. In late Antiquity, a man could be considered very well educated indeed if

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1. The present paper was presented in a conference on medieval education organized by J.J. Murphy in Kalamazoo 1988. Unfortunate circumstances have prevented the publication of the acts. This is why this old paper appears here, four years late. Apart from an insignificant face-lift nothing has been done to update the paper, so it reflects the 1988 stage of research.
 2. Perhaps the most determined attempt to develop an alternative logic was that by Raimund Lull about 1300; but one would hardly call it a success. Cf. Johnston (1987).

he had had an elementary course in definition, classification and the five universals, the ten categories, the analysis of sentences into subject and predicate, the square of opposites, the three figures of categorical syllogisms and then a little about hypothetical syllogisms. In Latin schools they would add an introduction to topical argumentation, in Greek ones perhaps something about fallacies. The few people who had an advanced course in philosophy would study the parts of Aristotle's *Organon* corresponding to the elementary course.¹ Only occasionally would they go further. The ontological questions raised by the theory of universals and of categories could give rise to some discussion, but on the whole logic was considered a discipline that could not be further developed; you just had to learn it.

The last civilized state in the Latin area, Ostrogothic Italy, collapsed about 550, and even elementary logic was scarcely studied for the next 250 years. Eastern Romania did not collapse, but the crisis about 650 was a catastrophe to higher education. In the 9th century East and West both start the return to learning and logic, reviving the ancient curriculum, and the ancient notion that the highest you can achieve in logic is to have a good understanding of Aristotle's *Organon*. Besides elementary "Introductions to logic", the characteristic product of logic courses is exegetical notes to the *Organon*. The Greeks had an advantage, for they had the whole of the *Organon* and they had access to ancient commentaries on the parts of it that were most commonly read.² Moreover, juicy Neoplatonic metaphysical works by Proclus and others were available if anybody wanted to pursue philosophy beyond logic. But such persons were rare. By the end of the first millennium 'philosophia' is commonly used as a synonym of 'logic'.

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1. Already St Jerome alludes to a course comprising Porphyry, *Categories*, *De interpretatione*, (Prior) *Analytics*, and Cicero's *Topics* (Ep. 50, PL 22: 513). As can be seen both from the Byzantine and the Arabic tradition, a Greek course habitually comprised only *Porph.*, *Cat.*, *Int.*, and *APr. I.1-7*.
 2. *Porph. Intr.*; *Arist. Cat.*, *Int.*, *APr. I.1-7*. Ancient commentaries that were certainly preserved in early Byzantine times: On Porphyry's *Isagoge* by Ammonius (CAG 4.3), David (CAG 18.2), Elias (CAG 18.1), Ps-Elias (ed. Westerink 1967). On Aristotle's *Categories* by Porphyry (CAG 4.1), Dexippus (CAG 4.2), Simplicius (CAG 8), Ammonius (CAG 4.4), Philoponus (CAG 13.1), Elias (CAG 18.1), Olympiodorus (CAG 12.1). On *De interpretatione* by Ammonius (CAG 4.5), Stephanus (CAG 18.3), Anonymus Tarán. On *Analytica Priora* by Alexander of Aphrodisias (CAG 2.1), Ammonius (CAG 4.6, incomplete) and Philoponus (CAG 13.2); an anonymous commentary on *APr. I.1-7* in ms. Paris BN gr. 2061 presumably also is late ancient. On *Analytica Posteriora* by Themistius and Philoponus. On *Topica* by Alexander of Aphrodisias (though probably not complete; edition of the remains, with medieval supplements, in CAG 2.2). On *Sophistici Elenchi*: none.

The same use of the word occurs in the West. But there the situation was a little different. Even in Antiquity the study of philosophy had not flourished in the Latin lands, and so when the recovery of learning started people had fewer ancient commentaries to help them understand Aristotle. Hence even teachers on top level long stuck to second-rate compendia rather than risk teaching the *Organon* itself. Now, top level was not very high up, and until about 1100 it was lower than in Constantinople in many respects; moreover a Western devotee of philosophy could not advance by turning his attention from logic to philosophical metaphysics; for there were scarcely any Latin books from which to learn about the subject. He could only go on to theology or try an independent development of logic.

These differences apart, there is a rather close parallelism between the development in Byzantium and Western Europe until about 1100. You can even notice a doctrinal similarity. Dependence on the same ancient tradition for exposition of Aristotle's *Categories* in both places led to the emergence of a genuine nominalism -the first in the history of philosophy.¹

Some parallelism continues in the next century when both cultures witness a determined effort between 1125 and 1150 to provide the editions and commentaries necessary to introduce the whole of the *Organon* (and other Aristotelian works) in regular schools.²

2. Difficulties in Comparing East and West.

The title of this paper is a bit infelicitous, for it suggests a comparison of Constantinople and Paris, of the old Greece that had changed its name into Romania and the old Romania that had changed its name into Francia. But once you get to the point in the twelfth century when the Western material on logic begins to be abundant and interesting, the comparison starts to make little sense. All that meets your gaze as you turn it from West to East is a lot of 'You don't find' 's:

1. Cf. Ebbesen (1990, forthcoming 1)

2. The introduction of the whole of the Aristotle into Western schools has been the subject of numerous studies; there is a good survey of Aristotle translations in Dod (1982). Activities in Byzantium have attracted less interest, but some research has followed the important discovery in Browning (1962) that Michael of Ephesus lived in the first half of the 12th century and belonged to the entourage of Anna Comnena. Cf. Ebbesen (1981) 1: 268ff., and Ebbesen (1990)

You don't find a Byzantine John Buridan.

Among the Greeks you don't find whole new logical disciplines, unknown to the ancients, like the theory of consequences or of supposition.

There is no counterpart of the *Sentence-commentary* in which theologians could revel in logic.

Actually, reviewing the history of Greek logic you seem to witness no development at all, while the West is racing forward.

If you have been raised as a Darwinist, this is very unsatisfactory. You can describe the history of logic in one half of medieval Europe as a process in which intra-theoretical evolutionary pressure suffices for explanation: there were at any time after 1100 so many competent logicians that you can take it for granted that weaknesses of a prevalent theory will be exploited by a competing one which after some years of reign will be ousted by a new mutation that exploits *its* weaknesses.

You can view Western logic as an almost closed ecological system with an understandable evolution. You cannot write the history of Byzantine logic in terms of ideas competing for survival. Logic there was cultivated by so few that there was no competition between logicians qua logicians. You need to look at something much less specific to get a closed ecological system.

3. Statistics

The claim about the paucity of logicians can be substantiated by means of a little statistics.

The number of named Greeks known to have written paraphrases or commentaries on any book of Aristotle's *Organon* between 800 and 1453 is somewhere in the range of a dozen to a score¹. Approximately the same number of named Latin authors are known to have commented on the *Sophistici Elenchi* between 1140 and 1325.²

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1. Eustratius (CAG 21.1), Georgius Pachymeres, Georgius Scholarius (ed. Jugie 1936), Iohannes Chortasmenus, Iohannes Italus, Iohannes Pediasimus (ed. de Falco 1926), Leo Magentinus (extracts in Ebbesen [1981] vol.2), Michael Ephesius (CAG 2.3; cf. Ebbesen [1981]), Michael Psellus, Photius (see *Amphilochia* 137-147 in Westerink [1986]), Sophonias (CAG 23.1-4), Theodorus Prodromus, Tzetzes. The list includes authors whose works are unedited or lost and is based on my own files; it may be incomplete, but the number of authors missing is unlikely to be significant. Cf. Benakis 1987.

2. *Literal commentaries*: Iacobus Veneticus, Nicolaus Parisiensis, Robertus Kilwardby, Albertus Magnus, Robertus Anglicus, Robertus de Aucumpno, Robertus Grosseteste, Aegidius Romanus, Guillelmus de Ockham.

Question commentaries: Boethius de Dacia, Iohannes Duns Scotus, Iohannes de Felmingham, Simon de Faverisham, Radulphus Brito, Gualterus Burlaeus.

For more information about these commentaries, see the bibliography in Ebbesen (1987) and the list of commentaries in Ebbesen (forthcoming, 2).

A virtually exhaustive list of Greek manuscripts containing commentaries or scholia on the *Sophistici Elenchi* and also including some compendia relating to the book contains about 65 items from before ca. 1500.¹ There are more than 90 items on a list of Latin annotated copies of the *Elenchi*, excluding commentaries and compendia.²

The low number of Greek manuscripts is not satisfactorily accounted for by pointing to losses caused by crusaders, Turks and subsequent lack of care because of illiterate poverty. The Byzantine works on logic are scissors-and-paste works and it is often possible to construct a pedigree explaining which predecessors each author owes his material to. As for the manuscripts of a single work, it is often possible to produce plausible stemmata, at least for the mss later than 1150.³ Neither feat is possible if a lot of links in the tradition have been lost, and it is rarely possible with western scholastic texts, though the conditions of preservation might seem to be better here.

With the Byzantine failure to produce new subdisciplines of logic went a failure to create new genres. Apart from an occasional essay⁴, a solitary dialogue or versified treatise, everything is cast in the traditional mould of scholium, scholium-commentary, paraphrase or compendium, all of which have a close dependence on the basic scholastic task of expounding the *Organon*. In the West, school training in disputation created at least four distinctly new genres, some quite freed from the ties to authoritative texts. First it made the scholium-commentary develop into the complex literal commentary including among other things formalized discussions of all sorts of interesting questions (as well as trivial ones); it next begot the question-commentary and the early sophisma in which a strange proposition containing a syncategorematic word is proved, disproved and given a final analysis in a solution. It finally begot the advanced sophisma in which the older sophismatic form and the question coalesce to provide a very flexible, but complicated framework for thorough discussion of any type of problem.⁵

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1. Plus 25 16th-century mss produced in Western Europe. The list is in Ebbesen (1981) 3: 281ff.
 2. Unpublished list of mss that I have myself examined.
 3. Specimens of stemmata showing the filiation of mss and the transmission of material from one author to another may be found in Ebbesen (1981).
 4. E.g. in the 'aporia kai lysis' form.
 5. For the Western forms of commentaries, see Ebbesen (forthcoming, 2). For sophismata, see Read (forthcoming).

4. The compendia

The most astonishing fact is that the fourteen centuries and a half from the birth of Christ till the fall of Constantinople have only left us three reasonably complete Greek Introductions to Logic.¹ From the 13th century alone, there are six famous ones in Latin² and several less known works. Moreover, such Latin works as stayed in use for long time were kept up to date through revisions and commentaries with the newest theories.

The earliest Byzantine compendium of logic is an anonymous one from 1007 ("Anonymus Heiberg"), the next is Nicephorus Blemmydes' from about 1260, and the last is Joseph Rhacendytes' from ca. 1325.³ Several compendia surely existed in late antiquity, but they were all allowed to disappear, probably before the year 900. There are strong indications that not many more than three Greek compendia were composed after the year 1000. The youngest author in the series, Joseph, in a preface complains about the defects of his predecessors. One is deficient in one respect, another in another. The description of "one and another" fits his two known predecessors - and for full measure, his own work simply consists of a verbatim repetition of most of both predecessors augmented with two chapters on matters neither of them had dealt with.⁴

The two new chapters deal with demonstration and topics, subjects that there was ancient tradition for omitting, but the neglect of which had been deplored since the 11th century.⁵ When the West got the full *Organon* in the 12th century, manuals of logic soon started to deal with everything except demonstration, and in the early 14th century that subject was finally added. Joseph's more complete survey of logic did not bring about a change in Byzantine education. Its deficient predecessor

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1. Notice that John Damascene's *Dialectica* does not cover much more than the lore of predicables and categories, i.e. the contents of Porphyry's *Isagoge* and Aristotle's *Categories*. For elementary theological purposes the semantical-cum-ontological part of the *Organon* was much more interesting than the purely logical stuff about equipollence, opposition of sentences, and syllogistics dealt with in *Peri hermeneias* and the *Prior Analytics*. Trinitarian doctrine and Christology employed old philosophical terms, such as 'nature' 'form' 'substance' 'individual', but made little appeal to properties of sentences or arguments.
 2. Anon., *Dialectica Monacensis* (ed. in De Rijk [1967] vol.2); Nicolaus Parisiensis, *Summe Metenses* (unedited); Petrus Hispanus, *Tractatus* (ed. De Rijk [1972]); Guillelmus de Shyreswoode, *Introductiones* (ed. Lohr & al. [1983]); Rogerus Bacon, *Summulae* (ed. de Libera [1987-88]); Lambertus Altissiodorensis, *Logica* (ed. Alessio [1971]).
 3. Edition of the anonymous compendium in Heiberg (1929); of Blemmydes in PL 142. Rhacendytes has not been edited.
 4. Cf. Ebbesen (1981) 1: 342f.
 5. See Ebbesen (1981) 1: 264.

from 1007 continued to be used some two hundred years after the fall of Constantinople.

All three Greek manuals share a peculiarity that links them to such Latin ones as Martianus Capella and Cassiodorus, the late ancient works that provided Carolingian Europe with its first introduction to logic. They are part of manuals that treat other disciplines as well.

5. The Educated Man.

Late ancient and early medieval schooling aimed at producing educated men with a broad rather than a profound knowledge. As late as the 12th century it was the case both in East and in West that a good philosopher or theologian could be expected to be able to quote ancient poetry and himself compose an acceptable hexameter poem,¹ or as one Greek did, to use the form of a Platonic dialogue to air misgivings about Porphyry's definitions of the universals.² In Byzantium the training in logic continued to be just one part in a general program designed to produce an educated man; the attention devoted to the discipline could scarcely compete with that given to the mastery of rhetoric and Homeric, Demosthenian and Thucydidean Greek.

A good picture of the situation in the 13th century is provided in an autobiography by George of Cyprus (patriarch 1283-89)³. As a big boy in French-ruled Cyprus in the 1250s he found to his dismay that the island possessed no Greek school of any standing. There was a Latin one, and it taught elementary Aristotelian logic, but George had difficulties with the language and left the school before he was fourteen. After a couple of years on the paternal farm, he ran away and headed for Ephesus where the famous Nicephorus Blemmydes taught in a monastery. However, the guru was surrounded by disciples who shielded the great man from contact with impecunious youngsters. Next George went to Nicaea, capital of the empire at the time. In the schools there you could be taught some elementary grammar and be instructed in classical poetry. But no philosophy. George only managed to learn some Aristotelian logic in the late 1260s, when, after recapturing Constantinople from the

1. The use of verse, hexameters and others, for expositions of scientific, philosophical and theological matters was quite popular in the West in the 12th and early 13th centuries. Alain de Lille ("Anticlaudianus"), Andrew Sunesen ("Hexaameron") and Alexander Neckham ("De laudibus divinae sapientiae" and other works) made noteworthy contributions to the genre. Radulphus Niger wrote a verse commentary on Aristotle's Topics and Elenchi. In Byzantium, John Tzetzes poured out didactic verse about the 3rd quarter of the 12th c., including a commentary on Porphyry's Isagoge.

2. Theodorus Prodromus, Xenedemus sive de vocibus. Edition in Cramer 1836: 204-215.

3. Published in PG 142

Franks, the emperor had relieved George Acropolites of his administrative duties in order that he should take over professorial ones. The young men who flocked round the new master were taught Aristotle's logic, Nicomachus' *Arithmetic*, Euclid's *Elements*, some unspecified advanced Aristotle, and rhetoric including practice in prose composition.

I think this gives us the Byzantine situation in a nutshell. Basic humanistic education was usually available.¹ Advanced education was not always available. It operated on the principle that a teacher, a book and a room makes a school.² A man with top training would teach full time for brief periods only; he would be an administrator most of his grown up life. No lasting learned environment could develop round him, least of all one specializing in logic. For top education was truly encyclopedic.

6. The Specialist

It was quite different in the West. Eleventh-century teachers were still generalists, but a favourable climate for learning had already multiplied their number so much that a top-level above cathedral school began to appear. A level that concentrated on philosophy and theology; since there was no Proclus to turn to for metaphysics, gifted teachers spent their energy on developing logic instead, and its use in theological contexts became much more common and accepted than was ever the case in Greece. The next century saw the final split between middle and top education, the gathering of many top-level teachers in one city, and finally their organization as a university. This created a both stable and competitive framework for learning.

If theology was the queen of sciences, logic was the art of arts. The twelfth century was very demanding of logicians. A wealth of new theories and theorems appeared.³ You had to take your stand on such ques-

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1. The patriarchal school (cf. Browning [1962-63]) in Constantinople surely was one of the more advanced schools, and Browning's list of works produced by its teachers show that grammar and rhetoric was cultivated there. But there is no sign of logical studies.
 2. Browning (1975) p.7 thinks that the 9th c. "university" of Constantinople had broken down by the time of Psellus in the mid- 11th c. when a new start was made. In the meantime "a return had been made to the classical pattern, whereby a teacher, a book and a room made a school." However, it seems pretty obvious that neither the new title of "consul of philosophers" nor any other 11th-c. innovations brought about a real continuity of teaching. It seems that in some periods the office was vacant or, as Constantinidis (1982) suggests, was often filled with people who already held a more important charge. In both cases, for the institution to have any practical importance, a number of well trained junior staff is required. No traces have been found of such staff. It seems quite illegitimate to transfer the Western designations 'university' and 'faculty' to Constantinopolitan schools, as did Fuchs in 1926 and many others with him.
 3. For an impression of the achievements of Latin logic, see Pinborg (1972) and Kretzmann & al. 1982.

tions as whether any true conditional expresses a necessary truth, whether a part can be something else than its whole, whether anything follows from a contradiction, whether the tense of a verb influences the extension over which its subject term ranges; questions the answers to which could be found in no ancient book.

By the beginning of the thirteenth century several new subdisciplines had appeared; theory of reference (supposition), theory of non-categorical words ('if' 'only' 'is' and a lot more). Then, for some time people turned their main attention to the loftier philosophical matters, but logic was not forgotten, only its development was slowed down. It grew fast again in the 14th century, when new special branches like the logic of change developed from earlier speculation about the words 'begins' 'ceases' and the like; and when a whole series of techniques were developed to analyze semantically complex sentences into a conjunction or disjunction of less opaque sentences.

Until the 15th century there was no serious attack on the status of logic. All sorts of higher study -- political theory, physics, theology and all -- had become dependent on the techniques of argumentation and analysis that were learnt in the logic lessons. Hence it kept its strong position in the curriculum and at least till the mid- 14th century it continued to grow more and more refined.

The price paid for this was that the teachers became specialists whose knowledge of Virgil, Horace and Persius decreased with the increase in logical skill.

One of the ironical facts about the renaissance is that about the same time that some Greeks¹ started to realize that Western logic was vastly superior to the rubbish usually taught in Constantinople, many Westerners started to value the Byzantine type of educated man higher than the specialist who knew the difference between 'any man's donkey is running' and 'the donkey of any man is running'.

1. Gennadius Scholarius, e.g. See Ebbesen & Pinborg 1981-82.

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