Renaissance Aristotelianism

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WHEN we try to understand the historical significance of Renaissance Aristotelianism, we have to face very great difficulties. The number of its representatives and the variety of their views seems to defy any common description, and this situation is further complicated by the persistent attack to which the school was subjected from different quarters. Moreover, the Aristotelians were in many ways influenced by ideas and methods that originated outside their own tradition, and on the other hand, most of the avowed opponents of Aristotelianism were more deeply influenced by it than they knew. We must add that Renaissance Aristotelianism has been neglected by most historians and is still unexplored in many of its sectors. Humanism and Platonism have long been considered peculiar to the Renaissance period, and their mediaeval antecedents have but recently received some scholarly attention. Aristotelianism, on the other hand, is so clearly a heritage and continuation of the mediaeval period that most scholars concerned with the Renaissance have tended to treat it as an unimportant residue of the preceding age and have uncritically repeated the charges made against it by its Renaissance opponents, whereas most students of mediaeval philosophy have focused their attention on the twelfth and thirteenth centuries and have tended to sacrifice the supposedly decadent scholasticism of the following centuries to the scorn of its enemies. Thus Renaissance Aristotelianism is a historical phenomenon which we are just beginning to understand in its proper significance.[1]

The intrinsic importance and historical influence of Aristotle are such an obvious fact that we may be surprised to learn that during the later centuries of classical antiquity his authority and influence were

[1] B. Nardi, *Sigieri di Brabante nel pensiero del Rinascimento italiano* (Rome 1945); *Saggi sull'Aristotelismo Padovano dal secolo XIV al XVI* (Florence 1958); John H. Randall Jr, *The School of Padua and the Emergence of Modern Science* (Padua 1961); *The Career of Philosophy* (New York 1962) 65–88, 284–307; see also P. O. Kristeller, *Renaissance Thought* (New York 1961); *Renaissance Thought II* (New York 1965).

rather limited and certainly inferior to that of Plato or the Stoics. His major philosophical writings had a limited circulation, and whereas his school flourished down to the second century A.D., when his commentator Alexander of Aphrodisias was active, his teachings did not receive much detailed attention outside the precincts of this school. Aristotle's work was studied much more closely after the third century in the Neoplatonic school, which advocated a synthesis of Plato and Aristotle and produced a large number of substantial commentaries on Aristotle's works. Yet the ancient Roman writers knew comparatively little about Aristotle, and only some of his logical works were translated into Latin by Boethius and thus were known to Western readers during the early Middle Ages. In the Byzantine East, Aristotle was known and studied through the mediaeval centuries, but his authority never surpassed that of Plato, nor was the study of his thought ever separated from the study of classical Greek poetry and literature.

It was only among the mediaeval Arabic thinkers that Aristotle emerged as the chief philosophical authority. When the Arabs began to translate many writings of Greek antiquity, they completely omitted the fields of theology, history, poetry and literary prose and concentrated only on philosophy and on the sciences, especially medicine, mathematics and astronomy, as well as astrology, alchemy and the other occult sciences. To the Arabs, the writings of Aristotle recommended themselves for several reasons: Aristotle's authority had been established by the Neoplatonic school and its commentators, with which the Arabs became most directly acquainted; Aristotle was admired by Galen, the chief medical authority; finally, the corpus of Aristotle's works represented as it were a complete encyclopaedia of the philosophical and some scientific disciplines, rich in content, solid in presentation and systematic in its arrangement, and hence very suitable for instruction and exposition. Thus Arabic philosophy developed largely on the basis of Aristotle, with a certain amount of admixture from Neoplatonism, and the two most influential Arabic philosophers of the Middle Ages, Avicenna in the eleventh and Averroes in the twelfth century, were also the leading mediaeval commentators on the writings of Aristotle.

Mediaeval Western thought and learning up to the eleventh century was of a rather elementary and encyclopaedic character and centered

around the so-called seven liberal arts,[2] which included some elementary logic but none of the other philosophical disciplines. The rise of scholasticism after the middle of the eleventh century involved a steady increase and expansion of philosophical and scientific interests, which were nourished at first by Plato's *Timaeus*,[3] by the works of Augustine and by other ancient Latin sources, but which gradually developed in different directions, a development that came to a climax during the thirteenth century. The study of logic prevailed over that of grammar as the basis of all advanced learning, and instruction in the schools began to focus on two chief forms of expression which also produced the two chief types of mediaeval learned literature: the *lectura*, that is the reading and interpretation in class of a standard text book, which produced the commentary; and the *disputatio*, the public debate of a proposed thesis on the basis of closely reasoned arguments pro and con, which produced the *quaestio* and the collections of questions such as the *summae*. Furthermore, new institutions of higher learning, the universities, offered instruction not only in the seven arts, but in the additional, more advanced and more specialized disciplines of theology, jurisprudence, medicine and philosophy. Finally, a large body of philosophical and scientific writings were translated into Latin from Arabic and Greek that greatly surpassed in quantity and substance anything in those fields that had been available to Roman antiquity or to the Early Middle Ages.[4]

In the philosophical disciplines, the writings of Aristotle and of his Arabic commentators were by far the most important body of material included in these new translations, and it is not at all surprising that they should have been adopted, after some initial resistance, as the chief textbooks of philosophical instruction at the

[2] The seven liberal arts were grammar, rhetoric, dialectic, arithmetic, geometry, astronomy and music. For the history of the scheme, see Kristeller, *Renaissance Thought II* 172–174.

[3] A large part of this work was known to the Middle Ages through the translation and commentary of Chalcidius. See *Timaeus a Calcidio translatus commentarioque instructus*, ed. J. H. Waszink (London and Leyden 1962).

[4] M. Steinschneider, *Die europaeischen Uebersetzungen aus dem Arabischen bis Mitte des 17. Jahrhunderts* (Graz 1956); J. T. Muckle, "Greek Works Translated Directly into Latin before 1350," *Mediaeval Studies* 4 (1942) 33–42; 5 (1943) 102–114; A. Pelzer in M. de Wulf, *Histoire de la philosophie médiévale*[6] I (Louvain 1934) 64–80; II (1936) 25–58; *Aristoteles Latinus, Codices*, ed. G. Lacombe and others, 2 vols. (Rome 1939 and Cambridge 1955) and *Supplementa Altera*, ed. L. Minio-Paluello (Bruges and Paris 1961).

universities of the thirteenth century.[5] The prevalence of Aristotelianism over Augustinianism during that period was closely related to this institutional fact, that is, to the adoption of Aristotle's works as textbooks in the courses on logic and natural philosophy, in ethics and metaphysics. This fact is still reflected in our names for some of the philosophical and scientific disciplines which are called after the titles of Aristotelian writings, such as physics and metaphysics, ethics, politics and economics. This institutional background accounts also for some of the characteristic features which distinguished the Aristotelian tradition during the following centuries. Since the writings of Aristotle and of his commentators were the prescribed textbooks in the philosophical disciplines, teachers and students would derive from them a common terminology, a number of common basic conceptions, and an even greater number of regularly discussed problems. The school tradition of the *lectura* and the *disputatio* also produced a special type of formalized reasoning and of accumulated arguments that is known as the scholastic method, a method that was not peculiar to Aristotelian philosophy, but had its counterparts in other branches of mediaeval learning such as theology or jurisprudence. Finally, since Aristotle is ambiguous or inconsistent or silent on many important philosophical issues, and since already his Greek and Arabic commentators had disagreed on the proper interpretation of many important passages, the Aristotelian philosophy of the thirteenth century and of the following centuries is by no means uniform, but represents a great variety of opinions on a great variety of special issues.

Students of mediaeval and Renaissance philosophy tried for a long time to keep the complicated historical facts under control and to classify the Aristotelian philosophers according to their allegiance to certain commentators or according to their stand on a few major issues; hence we read a good deal about Thomism, Scotism and Occamism, Averroism and Alexandrism.[6] Yet a closer reading of individual authors shows that the variety of views and issues is much greater than one might expect from most secondary accounts, that hardly any thinker gave his undivided allegiance to a single commentator, and that the alignments tend to shift a good deal when we

[5] F. van Steenberghen, *Aristote en Occident* (Louvain 1946); *Aristotle in the West* (Louvain 1955).

[6] F. Ueberweg, *Grundriss der Geschichte der Philosophie* II,[11] ed. B. Geyer (Berlin 1928); III,[12] ed. M. Frischeisen-Koehler and W. Moog (1924).

pass from one issue to another.[7] Consequently, these rough classifications ought to be used with great caution, even if we do not wish to discard them altogether. This whole situation is often misunderstood because historians tend to overestimate the importance and influence of Thomas Aquinas in his own time, and to exaggerate the role of theology within the mediaeval scheme of learning.[8] Theology was the queen of the sciences, to be sure, and students and scholars often proceeded in their career from the secular sciences to theology. Yet even during the earlier Middle Ages, the subject matter of the seven liberal arts was never confused with that of theology, and after the establishment of the universities in the thirteenth century, jurisprudence and medicine as well as philosophy were clearly distinct from theology. Much of their source material and subject matter were completely neutral from the theological point of view, and the question of theological interference arose only in those comparatively few instances where the principles of other disciplines seemed to lead to a conflict with theology and the dogma. Thomas Aquinas was primarily a theologian, but he was also an Aristotelian philosopher and took a prominent part in the effort to combine and harmonize the two disciplines. In doing so, he earned the high respect of his contemporaries and successors, but during his own time and for many centuries to come he had no privilege of authority or orthodoxy, except within his own Dominican order. In the history of Aristotelian philosophy, Thomas Aquinas is merely one of many distinguished commentators who on each of the debated issues adopted one of the possible solutions that were in turn adopted or rejected by his contemporaries and successors.

After the thirteenth century, the history of Aristotelianism coincides to a large extent with the doctrinal development of the various university faculties of philosophy. The contributions made during the fourteenth century by Aristotelian philosophers at Paris in physics and at Oxford in logic have been stressed by recent historians as important steps in the development which led to the rise of modern physics in the seventeenth century.[9] During the Renaissance period, the teach-

[7] E. Moody, "Galileo and Avempace," *Journal of the History of Ideas* 12 (1951) 163–193, 375–422.

[8] Many secondary accounts of mediaeval thought still give the impression that scholasticism is synonymous with Thomism and that there is no distinction between mediaeval theology and philosophy.

[9] P. Duhem, *Études sur Léonard de Vinci*, 3 vols. (Paris 1906–13); Anneliese Maier, *Studien zur Naturphilosophie der Spaetscholastik*, 5 vols. (Rome 1949–58). For a criticism of Duhem,

ing of Aristotelian philosophy at the French and English universities was continued, but its nature and extent have not yet been fully explored.[10] More famous and apparently more important was the tradition of Aristotelian philosophy in Spain and Portugal, where it was closely connected with the study of Catholic theology. The universities of Salamanca, Alcalà and Coimbra attained their highest development during the sixteenth and early seventeenth century, and their teachings exercised a wide influence even outside the peninsula. This Iberian neoscholasticism which was cultivated by the Jesuits and the other religious orders has continued to influence Catholic thought up to the present day.[11] On the other hand, the universities of Germany retained their Aristotelian orientation even after the Protestant Reformation, largely under the influence of Melanchthon, and this tradition has attracted some recent scholarly interest since it provides the background for the thought of Leibniz and Kant.[12]

Yet during the Renaissance period, Italy was one of the chief centers of Aristotelian philosophy, and the background and tendency of Italian Aristotelianism was in many ways different from that of the other countries. The chief difference derives from the institutional fact that the Italian universities had no faculties of theology,[13] and that the study and teaching of Aristotelian philosophy developed in a close connection with medicine.[14] The earliest traces of this medical and non-theological Aristotelianism can be found at Salerno in the twelfth century.[15] It appears sporadically during the early thirteenth

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cf. E. Rosen, "Renaissance Science as seen by Burckhardt and his Successors," in *The Renaissance*, ed. Tinsley Helton (Madison 1961) 77–103.

[10] R. Garcia Villoslada, *La Universidad de Paris durante los estudios de Francisco de Vitoria* (Rome 1938); William T. Costello, *The Scholastic Curriculum at Early Seventeenth-Century Cambridge* (Cambridge [Mass.] 1958); Mark H. Curtis, *Oxford and Cambridge in Transition, 1558–1642* (Oxford 1959).

[11] C. Giacon, *La seconda scolastica*, 3 vols. (Milan 1944–50); F. Stegmueller, *Filosofia e Teologia nas Universidades de Coimbra e Évora no século XVI* (Coimbra 1959).

[12] P. Petersen, *Geschichte der aristotelischen Philosophie im protestantischen Deutschland* (Leipzig 1921); M. Wundt, *Die deutsche Schulmetaphysik des 17. Jahrhunderts* (Tuebingen 1939); *Die deutsche Schulmetaphysik im Zeitalter der Aufklaerung* (Tuebingen 1945).

[13] After the middle of the fourteenth century, there were chairs of theology in the arts faculties and *collegia doctorum* authorized to confer degrees in theology, but no separate faculties of theology organized for the training of theologians after the manner of Paris, Oxford, or other Northern universities. The statutes of the Bologna theologians published by F. Ehrle (*I più antichi statuti della facoltà teologica dell' università di Bologna* [Bologna 1932]) concern in fact the *collegium doctorum*, not the teaching faculty.

[14] H. Rashdall, *The Universities of Europe in the Middle Ages*, ed. F. M. Powicke and A. B. Emden, I (Oxford 1936) 234–235.

[15] Kristeller, *Studies in Renaissance Thought and Letters* (Rome 1956) 495–551; "Nuove fonti per la medicina salernitana del secolo XII," *Rassegna storica salernitana* 18 (1957) 61–75;

century in Naples and Siena, and becomes firmly established at Bologna during the last quarter of the thirteenth century.[16] Aristotelianism as it appears after that time, first at Bologna and later at Padua and the other universities, has often been called Averroism,[17] but this label is somewhat misleading. Averroes' commentary was highly esteemed, to be sure, and widely used, but there was no complete or exclusive allegiance to his specific concepts. Actually these so-called Averroists differed from each other on a great number of issues, and what held them together was merely the use of Aristotle and of his commentators as a basis of their terminology, method and problems. The emphasis was clearly on natural philosophy and on logic, and the doctrines of the Paris and Oxford scholars of the fourteenth century were carefully studied and further developed by the Italian Aristotelians during the fifteenth and early sixteenth century. Their work has not yet been carefully explored, but it seems plausible that they provided the link between their fourteenth-century Northern predecessors and such Italian scientists as Leonardo and Galileo.[18] This Aristotelian tradition of the Italian universities continued without interruption through the sixteenth and early seventeenth century, and some of its most famous representatives, such as Pomponazzi, Zabarella and Cremonini, belong to this very period.

At the same time, Italian Aristotelianism, without abandoning its distinctive tradition, was increasingly affected by the humanist movement of the period. The mediaeval Latin translations of Aristotle gave way to the Greek text and to new humanist translations, and the authority of the mediaeval Arabic and Latin commentators was supplemented, if not superseded, by that of the ancient Greek commentators, including Alexander, who became more fully known for the first time.[19] Moreover, the teachings of non-Aristotelian ancient philosophers such as the Platonists or the Stoics received increasing

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"Beitrag der Schule von Salerno zur Entwicklung der scholastischen Wissenschaft im 12. Jahrhundert," in *Artes Liberales*, ed. J. Koch (Leyden 1959) 84–90.

[16] Kristeller, "A Philosophical Treatise from Bologna dedicated to Guido Cavalcanti . . ." in *Medioevo e Rinascimento: Studi in onore di Bruno Nardi* I (Florence 1955) 425–463, and the studies by Grabmann, A. Maier and Nardi cited there on p. 428.

[17] E. Renan, *Averroès et l'averroïsme* (Paris 1852).

[18] See above n.9. *Cf.* A. Koyré, *Études galiléennes*, 3 vols. (Paris 1939); M. Clagett, *Giovanni Marliani and Late Medieval Physics* (New York 1941); Curtis Wilson, *William Heytesbury* (Madison 1956). A. C. Crombie, *Augustine to Galileo* (London 1952), completely misses this point.

[19] Kristeller, *Studies* (above n.15) 337–353. For Alexander of Aphrosidias, see F. E. Cranz in *Catalogus Translationum et Commentariorum* I, ed. Kristeller (Washington 1960) 77–135.

attention and were sometimes adopted.[20] Thus Renaissance Aristotelianism, though challenged by a number of opponents, as we shall see, was a rich and powerful movement, supported to the end not merely by institutional inertia, as is often said, but by a large number of competent, acute and productive teachers and writers. Whereas the humanists were for the most part rhetoricians, philologists or moralists, and the Platonists were either isolated thinkers or amateur writers, the Aristotelians represented the hard core of the professional philosophers of the period. Without them, the picture of Renaissance thought and philosophy would be quite incomplete.[21] To give an idea of their contribution, let me describe a few of the more characteristic attitudes and concepts as they may be found in a variety of thinkers, and especially in Pomponazzi.

If we start with some of their ideas concerning knowledge and methodology, we must discuss first a theory which has been much debated and misrepresented by historians of philosophy, the so-called theory of the double truth.[22] Since the thirteenth century, the relationship between philosophy and theology represented a new problem, because theology had been developed, with the help of logic, into a systematically arranged and constructed body of teachings, and because philosophy, on the basis of Aristotle and his commentators, had been introduced as an equally broad and well arranged discipline. Thomas Aquinas tried to establish a complete harmony between philosophy and theology, but even he had to admit that many theological teachings could not be demonstrated or even confirmed by philosophical reasoning, and on the other hand, that certain well grounded Aristotelian theories, such as the eternity of the world, were incompatible with biblical doctrine. With his successors, Duns Scotus and William of Ockham, the gap between philosophy and theology became wider, and an increasing number of theological doctrines were deprived of their rational demonstration or confirmation and based on the testimony of faith alone. An even more radical answer to the problem was attempted by a contemporary of Aquinas, Siger de Brabant, and his solution was accepted by the so-called Latin

[20] For Stoic elements in Pomponazzi, see L. Zanta, *La renaissance du stoïcisme au XVI^e siècle* (Paris 1914).

[21] To the names mentioned in the text we may add, among many others, Paul of Venice, Peter of Mantua, Giovanni Marliani, Gaetano da Thiene, Nicoletto Vernia, Agostino Nifo, Alessandro Achillini. The lists given by Renan are ample but by no means complete.

[22] For a good discussion of the problem, see S. MacClintock, *Perversity and Error* (Bloomington 1956).

Averroists and by many other Aristotelian philosophers down to the seventeenth century.[23] This position does not state, as is often asserted, that something may be true in philosophy although the contrary is true in theology, but it merely states that something may be most probable according to reason and Aristotle, even though the contrary must be accepted as true on the basis of faith. This position has been criticized as untenable or as insincere by many Catholic and anti-Catholic historians. The charge of insincerity appeals to many people, but it is difficult to prove, and it certainly has not been justified by sufficient evidence so far. The position has its difficulties, to be sure, but it does not seem to be absurd, and it certainly offers an apparent way out of a difficult dilemma for a thinker who wants to hold on to both faith and reason, religion and philosophy. The position may not be rationally satisfactory, but as the expression of a genuine intellectual conflict it seems to deserve our respect. It certainly helps to draw a clear line of demarcation between philosophy and theology and to preserve a certain degree of independence for the former, and hence it is quite significant that the position was most strongly maintained, both at Paris and in Italy, by those professional philosophers who were not at the same time also theologians. The theory thus played a rôle in the emancipation of philosophy (and of the sciences) from theology. I do not think that it was in itself a conscious expression of free thought, but it prepared the way for the free thinkers of a later period, especially of the eighteenth century, who discarded faith and theology altogether and benefited from a tradition which had established rational enquiry as an independent enterprise.[24]

Within the domain of philosophy proper, there were three recognized sources of knowledge, though the emphasis placed on each of them varied from thinker to thinker. They were authority, reason, and experience. The authority in philosophy was not that of Scripture or the Church, but that of Aristotle and of his interpreters, an authority that was always worth considering and quoting, but which was not always beyond criticism. The second principle, reason, was primarily understood as the procedure of drawing logically valid inferences from observed facts. The principle of experience referred to the data

[23] In addition to Renan, see P. Mandonnet, *Siger de Brabant et l'averroïsme latin au XIII^e siècle*[2] (Louvain 1908–11); F. van Steenberghen, *Siger de Brabant d'après ses œuvres inédites*, 2 vols. (Louvain 1931–42).

[24] Kristeller, "El mito del ateismo renacentista y la tradicion francesa del librepensamiento," *Notas y Estudios de Filosofia* 4 (Tucumán 1953) 1–14.

of ordinary sense perception and observation. There definitely was no experimental method in the modern sense, that is, no controlled experiment, even though the word *experimentum* was frequently used. Yet the emphasis on experience was strong, and there is good reason for calling the Aristotelian school empiricist. There was less emphasis on self-evident principles than in Aristotle himself, for it was stated that all human knowledge was derived through imagination and abstraction from sense perception, and there was a widespread tendency to deny innate ideas as well as any kind of direct spiritual or contemplative experience. This is one of the points on which the difference between the Aristotelian and the Augustinian or Platonist tradition is quite tangible.[25] The Aristotelians may also be called naturalists in physics, for they recognize only natural causes verified by experience and reason. This attitude led Pomponazzi to an acute criticism of alleged miraculous phenomena in nature. On the other hand, astrological and alchemical conceptions had been inherited from Arabic Aristotelianism and were usually retained, and considered as natural rather than supernatural causes.

Another concept of the Aristotelian school that has attracted the attention of recent scholars is their discussion of method.[26] Drawing on Aristotle as well as on medical and mathematical notions, these thinkers insisted that the natural philosopher must infer his natural causes from observed effects and then test the inferred causes by deriving the effects from them, thus completing a kind of circle.[27] This doctrine found its most mature expression during the late sixteenth century in Jacopo Zabarella, who also used the term 'scientific' that was apparently coined at an earlier stage within this same tradition of Italian Aristotelianism.[28] When Galileo in his discussion of the scientific hypothesis refers to the compositive and resolutive method, he seems to base himself, if not directly on Zabarella, on some other discussion of scientific methodology as he may have found it in the writings of other Italian philosophers.[29]

[25] Kristeller, *Eight Philosophers of the Italian Renaissance* (Stanford 1954) 86–87.

[26] Randall, *The School of Padua* (above n.1) 13–68. Neal W. Gilbert, *Renaissance Concepts of Method* (New York 1960); *idem*, "Galileo and the School of Padua," *JHistPhilos* 1 (1963) 223–231.

[27] The same; E. Cassirer, *Das Erkenntnisproblem*[2] I (Berlin 1911) 136–144.

[28] It appears, for example, in Ugo Benzi (Randall, *The School of Padua*, 37–38). For Ugo Benzi, see D. P. Lockwood, *Ugo Benzi* (Chicago 1951).

[29] Galileo Galilei, *Dialogo sopra i due massimi sistemi del mondo, Giornata prima*, in his *Opere*, Ed. Nazionale, VII (Florence 1897) 75–76: "servendosi del metodo resolutivo."

Another tendency of later scholasticism concerns the old problem of universals. Thomas Aquinas had maintained a position of moderate realism close to the view of Aristotle himself, asserting that the general form or species is present or inherent in the existing particular object which owes its particularity to matter. This position was not maintained by the majority of later Aristotelians. Though Scotus and Ockham differ from each other, they seem to have in common a concern for the concrete particular, something that has been compared to the interest of the early Flemish painters in the objective details of the visible world.[30] Scotus introduced an individual form for each existing object, the so-called *haecceitas* or thisness, whereas Ockham adopted a nominalist position according to which universals have no intrinsic reality, but are valid only with reference to existing particulars, whereas the latter alone are real. The doctrine of universals was not always prominently discussed during the Renaissance, but the majority of Aristotelian philosophers seem to have followed Scotus or Ockham rather than Thomas on this important issue.

A considerable amount of the work done by the Aristotelian philosophers after the beginning of the fourteenth century was devoted to the field of logic, and it is becoming increasingly apparent that the fourteenth century was a most important period in the history of logic.[31] This logic was but to a small extent inspired by Aristotle, and rather developed along original lines. Terminist logic, as it is usually called, shows a certain affinity with ancient Stoic logic and again with contemporary mathematical and symbolic logic, but there are no historical connections between the three, as far as we can see. Much of this work in logic consisted in attempts to improve formal logic, and concerned the rules according to which we may draw valid inferences from certain types of statements. There was also a sportsmanlike interest in building up or refuting logical tricks that seemed to lead to false conclusions by apparently valid procedures. All this discussion was of course much stimulated by the practice of public disputation, and it was apparently quite popular with many students, as public debates and even courses in logic seem to be nowadays. Another characteristic feature of terminist logic was the thoroughgoing distinction between the intrinsic meaning of a

[30] E. Panofsky, *Gothic Architecture and Scholasticism* (New York 1957) 11–20.

[31] P. Boehner, *Medieval Logic* (Chicago 1952); E. A. Moody, *Truth and Consequence in Mediaeval Logic* (Amsterdam 1953); I. M. Bochenski, *Formale Logik* (Freiburg 1956).

term and its reference to existing objects, and a part of the discussion concerned the question to what extent the valid inferences drawn from a proposition affected its objective or existential reference. Logical analysis turned also on the various degrees of which a quality such as hot or cold was capable, and on the status of propositions which express a change, such as "he begins to be old," and very clever attempts were made to make use of numbers and their proportions for the solution of such problems.[32]

Besides logic, the other chief discipline cultivated by the Aristotelian philosophers was natural philosophy, which had for its basis Aristotle's *Physica*, but also his books *De coelo*, *De generatione et corruptione*, *De anima*, and others. It is often forgotten that modern physics inherited its name and subject matter from this Aristotelian discipline, and that the physics of the Aristotelians, taken in the narrower sense, centered on the problem of motion and covered such problems as free fall and projectile motion, space, time, and the void. All these concepts were discussed in great detail, and a variety of theories were proposed and defended. Most of these theories were definitely overthrown by seventeenth-century physics and have become completely obsolete, although historians of science sympathetic to the Middle Ages tend to cast a veil of discreet silence upon the obvious errors of Aristotelian physics, or seize upon some vague and dubious similarities with contemporary science to make it appear more correct and more modern than it actually is. Aside from the obvious fact that to every theorem in modern physics there corresponds in mediaeval Aristotelian physics a false theorem (or nothing at all), the crucial limitation of this Aristotelian physics was the belief in an essential and basic cleavage between celestial, incorruptible things and elementary, corruptible things, a belief which kept physics and astronomy apart; and secondly, a belief that elementary things below the moon are characterized by their qualities and not by quantitative relations, a belief which prevented or retarded the application of mathematics to physics. Yet it has been shown by recent studies, that a number of modern physical theories, such as the law of inertia or the concept of uniformly accelerated motion, were either discussed or prepared by the Aristotelian philosophers of the fourteenth century, and special attention has been given to their discussion of projectile motion. Here the philosophers of the fourteenth and following centuries

[32] See Wilson, *William Heytesbury* (above n.18).

rejected Aristotle's own crude theory, which considered the pressure of the surrounding air as the cause of continuing motion, and put in its place a more advanced theory, the so-called *impetus* theory, which assumes a momentum conveyed to the thrown object by the hand of the thrower. This theory was still discussed in the sixteenth century and was surely known to Leonardo and Galileo.[33]

In the Aristotelian system, the theory of the soul belonged, at least in some of its aspects, to natural philosophy. Among the many issues discussed by Aristotelian philosophers since the thirteenth century, special importance attached to the doctrine of the unity of the intellect. In an obscure passage of the *De anima*, Aristotle had distinguished between an active and a passive intellect,[34] and the passage had caused difficulties among the ancient commentators already, some of whom maintained that the active intellect was no part of the human soul, but identical with God.[35] Averroes proposed another view that was peculiar to him and his followers and that was to exercise great influence: according to this view, the passive intellect also is but one for all human beings, and an individual person acquires knowledge only by uniting his thinking faculty with this universal intellect.[36] This theory was attacked by Thomas Aquinas, Ficino and many others,[37] since it seemed incompatible with theological doctrine or with the immortality of the soul, but it was defended by a number of Aristotelian philosophers as being in accordance with Aristotle and reason. During the Renaissance, the doctrine was repeatedly condemned and did not count too many open adherents, but it continued to be discussed and to be defended in some modified fashion. Apparently its appeal rested on the guarantee it seemed to provide for the universal validity and certainty of true knowledge, in which each person would participate according to his ability—a view which the

[33] Aristotle, *Physica* 4.8.215a14–17. A. Maier, *Zwei Grundprobleme der Scholastik*[2] (Rome 1951) 116–119.

[34] *De anima* 3.5.430a10–25.

[35] For Alexander of Aphrodisias, see Ueberweg I,[12] ed. K. Praechter (Berlin 1926) 564–565. The first doubts about the doctrine were expressed by Theophrastus (*Opera*, ed. F. Wimmer [Paris 1866] p. 427, fr. 53b, from Themistius). See also O. Hamelin, *La théorie de l'intellect d'après Aristote et ses commentateurs* (Paris 1953); H. Kurfess, *Zur Geschichte der Erklaerung der aristotelischen Lehre vom sog. Νοῦς ποιητικός und παθητικός* (Tuebingen 1911). I am indebted for these references to Edward Mahoney.

[36] Averrois Cordubensis *Commentarium magnum in Aristotelis de anima libros*, ed. F. Stuart Crawford (Cambridge [Mass.] 1953) 436–454, 480–502.

[37] Thomas Aquinas, *De unitate intellectus contra Averroistas*; Marsilio Ficino, *Theologia Platonica*, book xv.

Platonists expressed in a somewhat different fashion through their syncretism.

Closely related with the unity of the intellect was the question of the immortality of the soul, which held the center of attention during the late fifteenth century and through much of the sixteenth.[38] The doctrine that the individual human soul is incorporeal and immortal had been an integral part of Platonist philosophy since the very beginning, and it had become an accepted part of Christian theology since the time of the Church Fathers. With the rise of Aristotelian philosophy in the thirteenth century, the question assumed new significance, since Aristotle was silent or ambiguous on the question and did not provide any clear statements or arguments in support of immortality, and since the relation of the intellect to the individual soul was itself a matter of controversy. Thus the notion that the immortality of the soul had to be based on faith alone gained ground during the fourteenth century. It was on this issue, which for him was central, that Ficino in the fifteenth century attacked the Averroists and other Aristotelians,[39] and it may have been due to Platonist influence that the immortality of the soul was officially proclaimed as a church dogma at the Lateran Council of 1513. Yet shortly after that date, the controversy was kindled again in a new manner by Pomponazzi, whose famous treatise on the subject appeared in 1516. Pomponazzi did not try to prove that the soul is mortal, as some of his critics assert. Yet we know from his earlier writings on the subject that he was familiar with the view of Alexander of Aphrodisias, who held that position, and was impressed by his arguments.[40] Hence he came out with the conclusion that the immortality of the soul cannot be demonstrated on the basis of reason or of Aristotle, but must be accepted as true on the basis of faith alone. The controversy which followed has recently been studied in detail,[41] and it is quite evident that Pomponazzi was not condemned

[38] G. di Napoli, *L'immortalità dell'anima nel Rinascimento* (Turin 1963); E. Gilson, "Autour de Pomponazzi, Problématique de l'immortalité de l'âme en Italie au début du XVI[e] siècle," *Archives d'histoire doctrinale et littéraire du Moyen Age* 28 (1961) 163–279; "L'affaire de l'immortalité de l'âme à Venise au début du XVI[e] siècle," in *Umanesimo Europeo e Umanesimo Veneziano*, ed. V. Branca (Florence 1963) 31–61.

[39] See above n.37.

[40] Kristeller, "A New Manuscript Source for Pomponazzi's Theory of the Soul from his Paduan Period," *Revue Internationale de Philosophie* 5 (1951) 144–157; "Two Unpublished Questions on the Soul by Pietro Pomponazzi," *Medievalia et Humanistica* 9 (1955) 76–101; 10 (1956) 151.

[41] See above n.38.

by the Catholic Church and that his position was adopted by several later Aristotelians. Those who tried to oppose and to refute him had to rely primarily on the arguments supplied by the Platonic tradition and most recently by Marsilio Ficino.[42] Although Pomponazzi could not defend immortality on rational grounds, the amount of attention he devoted to the problem shows that he shared the concern of his contemporaries with man and his individual destiny, and this fact is further confirmed by the manner in which he discusses the question. He insists that the human intellect, though limited to material objects, is immaterial in its own essence, and hence he stresses that the human soul, though mortal on purely natural grounds, is immortal in some respect (*secundum quid*), and participates in immortality through the activity of the intellect. Moreover, in stressing that the human soul is an incorporeal subject with a corporeal object, Pomponazzi, not unlike Ficino, was able to assign to man a central position in the universe, between the souls of the animals and the celestial intelligences, since he participates in a way in both realms. The emphasis on man and his dignity, which originated with the humanists and became one of the pervasive ideas of the Renaissance period, thus found its expression also in the system of one of its leading Aristotelians.[43]

This peculiar naturalistic treatment of man and his dignity received in Pomponazzi some further interesting developments that belong to the field of ethics rather than to that of natural philosophy. Aristotle had defined the ultimate moral end of man as a perfect happiness which can be attained during the present life and consists in activities according to virtue, and primarily in the contemplative life.[44] The lack of reference to a future life in which the virtues and vices of this life would find their proper rewards and punishments was a serious shortcoming of the Aristotelian doctrine from the Christian point of view, as compared with the notions of the future life found in Plato's myths and in the writings of the Neoplatonists. In the field of ethics, this was a great difficulty for the Aristotelian philosophers of the later Middle Ages, and they dealt with it either

[42] At least two of Pomponazzi's opponents, Fiandino and Nifo, were influenced by Ficino and Platonism (see di Napoli [above n.38] 300–301, 309–318; further details are given in the unpublished thesis by Martin Pine [Columbia Univ. 1964]). Gilson ignores the Platonist factor in the controversy.

[43] Kristeller, *Renaissance Thought* (above n.1) 134–138.

[44] *Ethica Nicomachea* 1.10–11; 10.7.

by abandoning Aristotle or by recurring to the so-called theory of the double truth. Pomponazzi, however, does not choose the straight Aristotelian position, as one might have expected, but goes beyond Aristotle in several significant points. He does not merely deny on natural grounds that future rewards and punishments correspond to present virtues and vices, but he asserts in several impressive passages that virtue is its own reward, vice its own punishment, nay that a virtuous action which receives an external reward is thus diminished in its intrinsic value, whereas a vicious act which is externally punished loses some of its intrinsic badness.[45] According to this view, which has its counterparts in the Stoics, in Spinoza and in Kant, virtue is truly autonomous and self-contained, and man attains his proper end not, as with the Platonists, in a postulated future life of which the present one offers at best a passing glimpse, but in the present life, that is, in the virtuous actions that each man is able to perform.

Moreover, Pomponazzi contradicts not only the Platonic tradition but also Aristotle himself by declaring that it is the moral life, not the contemplative life, through which a human being attains his proper end and happiness. The speculative intellect, as he puts it, is used but by a few persons and hence cannot be characteristic of all human beings, whereas the practical intellect is used by all and is therefore peculiar to man as man. Hence not all human beings can or should be philosophers or mathematicians, but must and can be virtuous, and on this depends the welfare of mankind.[46]

Thus the Aristotelian position in Pomponazzi rests upon an epistemology which is the opposite of Ficino's Platonist position, and it culminates in an interpretation of human life and its purpose and dignity that is also quite different. Each position is impressive in its own way, and in a sense tries to give an answer to the same basic questions which occupied and concerned the thought of the Renaissance period.

The achievements of the Aristotelian school, which I have been trying to describe, should certainly prevent us from ignoring it or from judging it exclusively by the standards of its opponents, as has been done so often. On the other hand, it is well known that the Renaissance witnessed not only the last flowering of Aristotelianism, but also a violent and widespread rebellion against it. This anti-

[45] Kristeller, *Eight Philosophers* (above n.25) 82–84.
[46] *Ibid.* 82.

Aristotelian movement was not as powerful or as effective as it is often represented, otherwise Aristotelianism would have succumbed to it much sooner than it did. If we want to understand the importance and the limitations of this anti-Aristotelian movement, we should realize above all that it was not a unified movement, but a series of different waves of thought, motivated by different problems and interests and not all related to one another. First there were the humanists, who ever since Petrarch's time criticized the authority of Aristotle and of his commentators. Their arguments were largely external and even superficial. They were motivated by a kind of departmental rivalry, cultivated different scholarly disciplines, and made no real contributions to the central disciplines pursued by the Aristotelians, especially to natural philosophy. The humanists were able to modify the Aristotelian tradition in some ways, but not to replace it. As to the Platonists, their attack against Aristotelianism was not persistent, and again it was limited to certain problems, especially in ethics and metaphysics, and hardly affected the central field of natural philosophy. When we come to the great natural philosophers such as Telesio or Bruno, the challenge to the natural philosophy of Aristotle appears to be much more serious, for here we encounter for the first time some novel and ingenious alternatives to the traditional theories. Nevertheless, these anti-Aristotelian naturalists owed more than they knew to the Aristotelian tradition from which they started and departed. Moreover, they lacked a firm and reliable method, and thus their speculations could not take the place of the well established and well reasoned theories of the Aristotelians.

The last attack was the only effective one, though it took some time before its full effects were felt. I mean the new natural science, first envisaged by Leonardo and finally founded by Galileo and by Kepler towards the very end of the Renaissance period. What was really involved was the science of physics, in which these thinkers produced a genuine revolution. For mathematics, astronomy and even medicine had long followed their own course of development outside Aristotelian philosophy, and biology continued to be Aristotelian for another while. The revolution occurred in physics, for it was the physics of the Aristotelians, based on qualities such as dryness and heaviness and separated from mathematics and astronomy, which had to be overthrown to make room for a quantitative physics that

was based on mathematics and connected in its basic principles with astronomy. Galileo and Kepler show in more than one statement that they were conscious of the nature of this change: being mathematicians and astronomers by profession, they claimed natural philosophy or physics as their legitimate domain, and demanded that it should be based on mathematics, not on formal logic, and allied with, not separated from, astronomy. As soon as this new physics had attained its first impressive results, the traditional physics of the Aristotelians was doomed, and gradually disappeared from the curriculum. Yet Aristotle, though defeated in physics, continued to reign for a long time in logic and ethics, and in the field of poetics he attained his greatest authority during the same seventeenth century that dethroned his physics.

Renaissance Aristotelianism thus was overthrown during the seventeenth century in the physical sciences and in metaphysics, but by that time it had fulfilled its historical function. For about three centuries, the Aristotelian school had carried on with partial success the main professional work in physics and logic, and thus it was able to bequeath to its successors, modern science and modern philosophy, their chief subject matter and some of their problems and concepts. Through its general methodological approach, the school had emancipated philosophy and the sciences from theology, and prepared the way for later empiricism, naturalism and free thought. Pomponazzi was still remembered in the eighteenth century, by Bayle and Berkeley as well as by many theologians; and the interest which modern historians have taken in him was not by chance first kindled in the nineteenth century, when Renan believed he discovered in him and his fellow Paduans an affinity with the free thinkers of a later age.[47]*

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[47] See above nn.23 and 24.

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