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The Liberal Arts

DEFINITION AND DIVISION

In the beginning of the *Metaphysics*, Aristotle speaks of art as something that arises "when from many experiences a single universal judgment is produced¹." In accordance with this very general definition, he speaks of the skill of the builder, the carpenter, and the doctor as an art, and in the same place he refers to the logical disciplines and mathematics as being equally arts². He distinguishes between these various pursuits by saying that some of them are ordered to the necessities of life (servile arts like carpentry), others to the acquiring of the sciences (logic), while still others have no utility since the knowledge of them (mathematics) is an end in itself³. Commenting on this passage, St. Thomas speaks of the mathematical arts as *maximae speculativae*⁴.

This general use of the term "art" to refer both to practical skills and speculative disciplines has been retained steadily since the time of Aristotle. It has been, and still is, the custom to speak of sculpture and medicine as arts and to refer to the "liberal arts" of logic and mathematics.

Despite the venerableness of this usage and despite its universality, the use of the same term for such widely different things may well be a source of confusion. It is only natural for men to judge what is less known to them by what is more known. In the matter of art, we know best the servile arts and the fine arts, like sculpture and painting. If the term "art" were to be applied in the same sense to them and to logic or mathematics, confusion would necessarily result. It is doubtless for this reason that in the passage under consideration Aristotle himself refers us to the *Ethics* for a proper distinction between science and art. As St. Thomas remarks:

Since he had used the names art, wisdom and science as it were indifferently, lest anyone should think these names synonymous, or having almost the same meaning, he removes this opinion, and refers us to the book on moral acts, that is to the sixth book of the *Ethics*, where it is stated in what manner science and art, and wisdom, understanding of principles and prudence differ⁵.

1. *Metaphysics*, I, chap.1, 981a6.

2. *Ibid.*, 981a15, 981b15.

3. *Ibid.*, 981b25.

4. *In I Metaphysicorum*, lect.1 (ed. CATHALA), n.33.

5. *In I Metaph.*, lect.1, n.34: "Sed quia usus nomine artis fuerat et sapientiae et scientiae quasi indifferenter, ne aliquis putet haec omnia esse nomina synonyma idem penitus significantia, hanc opinionem removet, et remittit ad librum moralium, idest ad sextum Ethicorum, ubi dictum est, in quo differant scientia et ars et sapientia et prudentia et intellectus."

In the sixth book of the *Ethics*, Aristotle distinguishes two parts of the rational soul: a scientific part according to which we consider things whose principles are unchanging, and an opinionative part which considers changeable things¹. An example of an object which is unchanging in its nature is the predicamental number four, and an example of something which is naturally mutable is the stock market or a piece of stone.

Those things that are by their nature unchanging and fixed can be objects of certain knowledge. When we know their causes, we can see why it is that they are of necessity what they are. This it is to have science in the strict sense².

We can consider changeable things either in order to regulate our moral conduct with respect to them, or in order that we may change them physically by giving them a new accidental form. It is this last consideration of mutable objects that is properly art.

Aristotle defines art in this sense as the habit of making with reason³. He speaks of it as essentially transitive, since it enables us to produce in matter an imitation of an idea that was first in our mind. In commenting on this passage, St. Thomas emphasizes this transitiveness and contrasts it with the immanent character of prudence.

Those things that can be otherwise are divided in a twofold way: namely, into what is (the object of) action and that which is (the object of) making; and from this it is known that action is other than making.

We can assent to this for extraneous reasons, that is for reasons that are determined outside this science, namely, in the ninth book of the *Metaphysics*. There the difference between action and making is shown. Action remaining in the agent himself is called action, as for instance, thinking and willing. Making is an operation going out into external matter to form something from it, as building and cutting. Since habitus are distinguished according to their objects, it follows that the habitus of acting with reason (prudence) will be different from the habitus of making with reason (art); also, (it follows) that one of them is not contained under another, just as action and making are not contained under one another, since action is not making, and making is not action. They are distinguished by opposite differences as appears from what has been said⁴.

There is a further thing to be observed about both art and prudence. Since their object is contingent, the certitude of these two habitus cannot

1. Chap.2, 1193a5.

2. *Posterior Analytics*, I, chap.2, 71a25.

3. *Ethics*, VI, chap.3, 1140a10.

4. *In VI Ethicorum* (ed. Pirotta), nn.1150-1151: "Dicit ergo primo, quod contingens aliter se habere dividitur in duo: scilicet in aliquid quod est agibile, et aliquid quod est factibile ejus: et per hoc cognoscitur quod alterum est actio et alterum est factio.

Et his possumus assentire per rationes exteriores, idest per ea quae determinata sunt extra istam scientiam, scilicet in nono Metaphysicorum. Ibi enim ostensa est differentia inter actionem et factionem. Nam actio manens in ipso agente operatio dicitur, ut videre, intelligere et velle. Sed factio est operatio transiens in exteriorem materiam ad aliquod formandum ex ea, sicut aedificare et secare. Quia enim habitus distinguuntur secundum objectum, consequens est quod habitus qui est activus cum ratione quae est prudentia, sit alius ab habitu qui est factivus cum ratione qui est ars; et quod unus eorum non contineatur sub alio, sicut neque actio et factio continentur sub invicem, quia neque actio est factio, neque factio est actio. Distinguuntur enim oppositis differentiis, ut ex dictis patet."

be based upon their respective objects. We have certitude when we know something cannot be otherwise, whereas the contingent is precisely what is capable of variation. Hence it is that the certitude of art and prudence must be based on the direction given by the mind. What is guaranteed us by the virtue of prudence or art is a proper mode of proceeding in doing or making¹.

Thus we can see that there are two characters that belong to art taken in its proper sense: it bears upon the contingent in an essentially transitive way, and its certitude cannot, therefore, be based upon the object, but rather on the direction given by the mind. If we try to apply these characteristics to logic and mathematics, the other two disciplines that Aristotle and the rest of the western tradition have agreed to call "arts," we shall see why it is that the term "art" needs clarification.

In the case of mathematics (taken of course in the ancient sense of demonstrative sciences about number, on the one hand, and about magnitude, on the other), there can be no doubt about the inapplicability of these notions. When we attempt to show that the sum of the angles of a triangle is equal to two right angles, the object of our consideration is the necessary and unchanging nature of triangle. Furthermore, whatever certitude we attain depends entirely on the nature of the object we are considering. In other words, geometry is essentially speculative, essentially a science. It seeks to manifest the properties that necessarily belong to the various kinds of magnitude, and this is its whole nature.

At first sight there may be some slight doubt about logic. One common definition of it presents it as the art whereby we direct the acts of our own reason so that we can arrive at the truth. It is possible to start with this as a premise and say that all our actions, even intellectual ones, are essentially contingent. This would make logic an art that bears upon the contingent just as the practical arts and prudence do.

This argument is based upon the assumption that logic directs intellectual acts as to their exercise, for it is in this aspect that they are contingent. Intellectual acts are specified as to their essence by their objects, and it is these that logic directs by ordering them. When we have formed an argument, it is possible by means of the rules of logic to see whether we have ordered the concepts properly. We can see whether the premises are necessary and primary and can therefore claim to be premises in a demonstrative argument. This judgment of our own argument always proceeds resolutely, and the resolution is always in terms of the nature of the second intentions that are the object of logic. It is by ordering these second intentions that logic is indivisibly science and art.

Since logic and mathematics are both sciences, and science is contrary to art in its object and in its manner of proceeding as well as in the foundations of its certitude, how is it possible to keep on speaking of "liberal arts"

1. JOHN OF ST. THOMAS, *Cursus theologicus* (ed. REISER), t.6, pp.467ff., nn.1-7.

when we are speaking primarily of sciences? The answer to this question is very instructive about the nature of the disciplines in question. St. Thomas answers it by saying that even in some speculative disciplines there is *aliquod per modum cuiusdam operis*, something in the nature of a work, like the construction of a syllogism, of a proper sentence, the making of an enumeration or measurement; therefore, these disciplines are called arts by a certain similitude¹.

St. Thomas speaks of construction in mathematics in a passage of his commentary on the *Posterior Analytics*. In it he distinguishes between the ultimate subjects of geometry—line, surface, etc, and certain secondary subjects which are “constructed from the first.”

In those sciences which are about an accident, nothing prevents that which is taken as the subject of some passion to be taken also as a passion of some prior subject. This does not, however, proceed to infinity. We must come to something first in that science which is taken as a subject, and in no way as a passion. This is clear in the mathematical sciences which are about discrete and continuous quantity. We suppose in these sciences those things that are first in the genus of quantity, as unity, line and surface, and other things of the kind. Having supposed these, we seek other things, as the equilateral triangle and the square in geometry, and other things of the same kind. These demonstrations are spoken of as it were *operatively*, as, for instance, to erect an equilateral triangle on a given straight line. Having found this, we then prove other passions of it, as, for example, that its angles are equal, or something similar. It is clear that triangle in the first demonstration is related as a passion [to a subject] and in the second is taken as a subject².

In a passage in the commentary on the *Metaphysics*, he speaks of another example of construction in mathematics. The passage is too long to cite, but in general it shows that by drawing lines and dividing parts of figures, properties that are known only potentially become actually manifest. An example is the protraction of the base of a triangle and then drawing from it a line parallel to one of the remaining sides of the triangle. Hereby it will be immediately clear that the sum of the angles of a triangle is equal to two right angles³.

In logic we have something similar. The second intentions we study belong by right not to nature but to the order of knowledge, to our intellectual product. They are relations that exist only in things as known⁴. To show this fully it would be necessary to illustrate what we have said

1. *Ia IIae*, q.57, a.3, ad 3.

2. *In I Posteriorum Analyticorum*, lect.2, n.5: “In illis autem scientiis, quae sunt de aliquibus accidentibus, nihil prohibet id, quod accipitur ut subiectum respectu alicuius passionis, accipi etiam ut passionem respectu anterioris subiecti. Hoc tamen non in infinitum procedit. Est enim devenire ad aliquod primum in scientia illa, quod ita accipitur ut subiectum, quod nullo modo ut passio; sicut patet in mathematicis scientiis, quae sunt de quantitate continua vel discreta. Supponuntur enim in his scientiis ea quae sunt prima in genere quantitatis; sicut *unitas*, et *linea* et *superficies* et alia huiusmodi. Quibus suppositis, per demonstrationem quaeruntur quaedam alia, sicut *triangulus aequilaterus*, *quadratum* in geometricis et alia huiusmodi. Quae quidem demonstrationes quasi *operativae* dicuntur, ut est illud, *Super rectam lineam datam triangulum aequilaterum constituere*. Quo adinvento, rursus de eo aliquae passionis probantur, sicut quod eius anguli sunt aequales aut aliquid huiusmodi. Patet igitur quod *triangulus* in primo modo demonstrationis se habet ut *passio*, in secundo se habet ut *subiectum*.”

3. *In IX Metaph.*, lect.10, nn.1188-1192.

4. J. OF ST. THOMAS, *Cursus philosophicus* (ed. REISER), t.1, p.285a19.

by a consideration of every type of doctrine, and that would go beyond the limits of this general study. From what has been said, however, it should be clear why the mathematical disciplines and the logical ones are called arts.

The other speculative disciplines, metaphysics and natural doctrine, have their objects naturally as something given, and not as inhering in or manifested by one of our own constructions. Hence it is that they are called sciences simply, and not arts¹.

Since the liberal arts are ordered to the intelligence, either as furnishing the mode of the other sciences or as being speculative disciplines worth knowing in their own right, they are nobler than the servile arts. Indeed, the reason that the first are called liberal and the second servile is that the liberal arts are ordered to the intelligence, the principal part of the soul, which makes us free, and the servile arts are ordered to the body, according to which we are subjected to many necessities².

Cajetan sees the decisive difference between liberal and servile arts in this: that liberal arts are ordered to produce an immanent effect while servile arts are ordered *primo et per se* to producing some change in a material object³. The constructions of mathematics and the ordering of the objects in logic are necessary in order that something may be manifested to the intelligence.

It is for this reason that the liberal arts are nobler than the servile arts, since it is nobler to serve the mind than the body. The fact that they are nobler does not make them more properly arts, however. The notion of art belongs properly to servile art and only by extension to liberal arts. Speaking of these last, Cajetan says:

... Art *ut in pluribus* proceeds by determined ways. From this it happens that speculative habitus which construct something as it were by determined ways, share in the nature of art. . . They are not, however, contained under art, for art in the strict sense is right reason with respect to things that can properly be made, namely those things that are outside, of which the practical intellect is the maker⁴.

In other words, the notion of art belongs properly and *per se* to the intellectual virtue that has as its object the transformation of matter. Since, however, the speculative intelligence has a certain work which it produces according to determined ways, the notion of art can be extended to it. Thus the mind can form a genus which will apply to any formation in determined ways. This genus will be participated in analogously by servile art and by liberal art⁵.

1. *Ia IIae*, q.57, a.3, ad 3.

2. *Ibid.*

3. *In IIam IIae*, q.122, a.4, ad 3.

4. *Ibid.*, q.47, a.2, ad 3: "Ars vero ut in pluribus per determinatas procedit vias. Ex hoc enim fit ut speculativi habitus, quasi aliquid facientes per determinatas vias, artis rationem induunt, non autem prudentiae. Non tamen continentur sub arte: quia haec proprie est ratio recta factibilium proprie, quae scilicet sunt extra, quorum intellectus practicus est factivus."

5. In the light of this, cf. ST. THOMAS, *In VI Eth.*, lect.3, n.1153.

One objection that can be brought against Cajetan's distinction of the liberal arts from the servile is that it might seem at first to place music among the servile arts. The reason for this difficulty is that the art of the musician might seem first of all to be aimed at modifying sound which is something physical. This is true of vocal music and even more plainly of instrumental music.

It is not sufficient to reply to this objection by distinguishing between *musica docens* and *musica utens* and then claiming only the first, the theory of music, as liberal. Not only the theory but also the practice of music is liberal because, like the other liberal arts, it aims at ordering something which is an object for the intelligence. Poetry, too, and rhetoric, as well as dialectic (though in a less important fashion), are concerned with the word as a physical instrument of manifestation. What these arts aim at primarily is producing something in the mind of the hearer. Their means of doing this is a physical instrument which is merely used for this end. St. Thomas himself distinguishes this sort of use of matter from the art that attempts to place a form upon a material subject.

Sometimes one turns to matter only for use, as a horse for riding or a stringed instrument for playing. Sometimes one does so to change it into some other form, as when an artisan makes a bed or a house¹.

It is possible to make a further distinction of arts according to their mode and according to their end. The distinction according to their mode will be the one we have just given. The distinction according to the end will be based on the purpose of the art. If the art aims at something liberal, even though *primo et per se* its effect is to make some permanent change in matter, it can be called liberal according to its end. In this way all the fine arts down to, but not including, architecture can be said to be liberal.

The liberal arts are usually divided into two main groups: the *artes sermocinales* and the arts that relate to quantity, or the quadrivial arts, as they are sometimes called. The first group includes all those arts that are concerned with thought as such and with the expression of thought. The second group contains the mathematical arts of arithmetic and geometry and the arts concerned with the application of mathematics to nature.

The first of the *artes sermocinales* is grammar. All the logical arts are ordered to the perfection of the other sciences and are not, therefore, ends in themselves; still they are sciences and the knowing of them is consequently a certain perfection. Grammar, however, is not even a science. It is concerned with an *ex post facto* investigation of the forms of language in order that correct usage may be determined. As its etymology

1. *In I Eth.*, lect.1, n.13: "Quandoque enim aliquis exteriorem materiam assumit solum ad usum, sicut equum ad equitandum, et cytharam ad cytharizandum. Quandoque autem assumunt materiam exteriorem, ut mutant eam in aliquam formam; sicut cum artifex facit domum aut lectum."

implies, grammar is very much concerned with writing, with the letters and the sounds whereby one form differs from another. Though grammar is the humblest of the arts, it is necessary since it assures at least elementary communication between men and is presupposed by all the higher arts.

The logical arts, St. Thomas says, belong to *Philosophia rationalis*, the discipline wherein the mind makes an investigation into its proper act in order that it may be guided toward the truth in an easy, orderly, and unerring manner. It properly includes the study of all those acts whereby the human reason proceeds from one consideration to another. St. Thomas indicates the scope of this discipline.

...The acts of reason are in some way like the acts of nature. Whence it is that art imitates nature as much as it can. In the acts of nature, a triple diversity is found. In certain matters, nature acts from necessity in such a way that it cannot fail. In others, nature succeeds for the most part, although sometimes it may fail in its act. Whence, in these matters there is a twofold act: one which is for the most part, as when a perfect animal is generated from seed; another, when nature falls short of what is proper to it, as when from seed a monster is generated because of the corruption of some principle. These three are also found in the acts of reason. There is a process of reason which produces a certain necessity, in which it is impossible not to have the truth, and by such a process the certitude of science is acquired. There is also another process wherein we reach the truth for the most part, yet not necessarily. There is a third process of reason in which the reason falls short of the truth through the neglect of some principle which one ought to observe in reasoning.

The part of logic which serves the first process is called *Judicative*, since its judgment has the certitude of science. Since it is impossible to have a certain judgment about effects except by resolution into first principles, this part is called *Analytically*, that is, resolute. The certitude of judgment which is acquired through resolution is either from the form of the syllogism alone (and to this the book of *Prior Analytically*, which is about the syllogism simply, is ordered), or it is also from the matter since the propositions are *per se* and necessary (and it is to this that the book of *Posterior Analytically* is ordered).

The second process of reason is served by the other part of logic which is called *Inventive*. The reason for this is that invention is not always certain; wherefore, those things that are discovered need judgment in order that there may be certainty. Just as in nature there is a certain gradation in those things that succeed for the most part (for to whatever degree the power of nature is stronger, to that degree does it fail more rarely in its effect), so in the process of reason which is not with entire certitude there is a certain gradation according to the greater or less approach to certitude. By a process of this kind, even though science is not generated, there does result faith or opinion because of the probability of the propositions from which the argument proceeds. Here the mind totally inclines toward one side of a contradiction, although with a fear of the opposite. To this process the topics, or dialectics, is ordered, for the dialectical syllogism proceeds from probable premises, and it is this that Aristotle treats in the book of *Topics*. Sometimes there does not result complete faith or opinion, but a certain suspicion, since there is not a total inclination toward one side rather than the other. To this the book of the *Rhetoric* is ordered. Sometimes only by a certain estimation we incline to one side of a contradiction rather than another on account of some representation, just as a man comes to abominate a given food if it is represented to him in the likeness of something abominable. To this the *Poetics* is ordered, for it belongs to a poet to lead to something virtuous by an appropriate representation. All these things belong to *Rational Philosophy*, for it belongs to the reason to lead from one thing to another¹.

1. In *I Post. Anal.*, lect.1, nn.5, 6: "Attendendum est autem quod actus rationis similes sunt, quantum ad aliquid, actibus naturae. Unde et ars imitatur naturam in quantum potest. In actibus autem naturae invenitur triplex diversitas. In quibusdam enim natura ex necessitate agit, ita quod non potest deficere. In quibus-

It is to be noted that St. Thomas lists these arts in the descending order of their perfection. This, as we shall see, is not necessarily the order in which they should be acquired.

The arts of quantity are the hardest to discuss in our day. The irreducible division between discrete and continuous quantity which founds the separate sciences of arithmetic and geometry is complicated by the newer disciplines like algebra and calculus which tend to ignore this distinction. No doubt these last mentioned disciplines belong to the *habitus* of dialectics since they so continuously use beings of reason in the course of their operations. This dialectical prolongation and development of mathematics has been the main instrument in the modern study of nature and the solution of the philosophical problems raised by the sciences are inextricably bound up with those that spring from mathematics. It is this task which is the most difficult and the most necessary for any one who would order the liberal arts in a modern school.

It is in view of their end that the liberal arts are to be ordered. St. Thomas (quoting almost verbatim from Hugh of St. Victor)¹ speaks of the end of the liberal arts in the following terms:

dam vero natura ut frequentius operatur, licet quandoque possit deficere a proprio actu. Unde in his necesse est esse duplicem actum; unum, qui sit ut in pluribus, sicut cum ex semine generatur animal perfectum; alium vero quando natura deficit ab eo quod est sibi conveniens, sicut cum ex semine generatur aliquid monstrum propter corruptionem alicuius principii. Et haec etiam tria inveniuntur in actibus rationis. Est enim aliquis rationis processus necessitatem inducens, in quo non est possibile esse veritatis defectum; et per huiusmodi rationis processus scientiae certitudo acquiritur. Est autem alius rationis processus, in quo ut in pluribus verum concluditur, non tamen necessitatem habens. Tertius vero rationis processus est, in quo ratio a vero deficit propter alicuius principii defectum; quod in ratiocinando erat observandum.

Pars autem Logicae, quae primo deservit processui, pars *Iudicativa* dicitur, eo quod iudicium est cum certitudine scientiae. Et quia iudicium certum de effectibus haberi non potest nisi resolvendo in prima principia, ideo pars haec *Analytica* vocatur, id est resolutoria. Certitudo autem iudicii, quae per resolutionem habetur, est, vel ex ipsa forma syllogismi tantum, et ad hoc ordinatur liber *Priorum analyticorum*, qui est de syllogismo simpliciter; vel etiam cum hoc ex materia, quia sumuntur propositiones per se et necessariae, et ad hoc ordinatur liber *Posteriorum analyticorum*, qui est de syllogismo demonstrativo.

Secundo autem rationis processui deservit alia pars Logicae, quae dicitur *Inventiva*. Nam inventio non semper est cum certitudine. Unde de his, quae inventa sunt, iudicium requiritur, ad hoc quod certitudo habeatur. Sicut autem in rebus naturalibus, in his quae ut in pluribus agunt, gradus quidam attenditur (quia quanto virtus naturae est fortior, tanto rarius deficit a suo effectu), ita et in processu rationis, qui non est cum omnimoda certitudine, gradus aliquis invenitur, secundum quod magis et minus ad perfectam certitudinem acceditur. Per huiusmodi enim processum, quandoque quidem, etsi non fiat scientia, fit tamen fides vel opinio propter probabilitatem propositionum, ex quibus proceditur: quia ratio totaliter declinat in unam partem contradictionis, licet cum formidine alterius, et ad hoc ordinatur *Topica* sive *Dialectica*. Nam syllogismus dialecticus ex probabilibus est, de quo agit Aristoteles in libro *Topicorum*.—Quandoque vero, non fit complete fides vel opinio, sed *suspicio* quaedam, quia non totaliter declinat ad unam partem contradictionis, licet magis inclinetur in hanc quam in illam. Et ad hoc ordinatur *Rhetorica*.—Quandoque vero sola existimatio declinat in aliquam partem contradictionis propter aliquam repraesentationem, ad modum quo fit homini abominatio alicuius cibi, si repraesentetur ei sub similitudine alicuius abominabilis. Et ad hoc ordinatur *Poetica*; nam poetae est inducere ad aliquod virtuosum per aliquam decentem repraesentationem. Omnia autem haec ad *Rationalem Philosophiam* pertinent: inducere enim ex uno in aliud rationis est."

1. HUGH OF ST. VICTOR, *Didascalicon*, III, chap.3 (ed. BUTTIMER, Cath. Univ., Washington), p.53.

Those who wish to learn philosophy are first raised from ignorance by these (the liberal arts), and so these arts are divided into the trivium (triple way) and the quadrivium (quadruple way) because by these as by certain roads the enlivened mind enters into the secrets of philosophy. This agrees with those words of the Philosopher in the second book of the *Metaphysics* where he says that the method of science must be sought before the sciences. The Commentator in the same place says that logic which teaches the mode of all the sciences must be learned before all the other sciences, and this refers to the trivium. Aristotle also says in the sixth book of the *Ethics* that mathematics can be learned by boys, but not physics, which requires experience. From this we are given to understand that first logic and then mathematics must be learned. This refers to the quadrivium, and by these as by certain roads the mind is prepared for the other physical disciplines¹.

In his own commentary on the passage of the *Ethics* just referred to, St. Thomas gives the complete order of learning.

This will be the right order of learning, that first children be instructed in the logical disciplines, because logic teaches the mode of all philosophy. Secondly, they should be instructed in mathematics, which neither require experience nor transcend the imagination. Thirdly, (they should be given instruction in) the natural disciplines, which, although they do not exceed sense and imagination, nevertheless require experience. Fourthly, (they should be taught) the moral disciplines, which require both experience and a mind free from the passions, as is shown in the first book (of the *Ethics*). Fifthly, (they should be instructed in) sapiential and divine disciplines which transcend the imagination and require a strong intellect².

In ordering the arts, St. Thomas uses two distinct principles. He says that logic must come first because it is necessary for the other sciences, and that mathematics comes next because it is the easiest of the sciences. In a way these principles are contradictory. Logic is among the most difficult of the sciences, since its object is most removed from sense and imagination. Logic studies a special kind of relation of reason, second intentions, and these are of a kind of abstraction similar to that of metaphysics³. The obvious order of proceeding would be to go universally from what is easier for us to what is more difficult. The reason St. Thomas gives for not following this order in the beginning of the acquisition of the sciences is that logic gives the mode of the sciences. We must investigate this reason briefly.

What seems to be meant is that it is impossible to have any of the other sciences in a perfect state without first possessing logic. By a "perfect state" is understood the possession of a science in such a way that one not only knows the proofs of whatever propositions are predicated of a subject, but also sees how they are probative. Given this kind of knowledge, one is capable of refuting all objections, even difficult ones, as long as they are based upon the principles of the science in question. This kind of reflection upon our argument is identical with a scientific knowledge of logic, since it involves the order proper in argument and the probative force of various kinds of argument. Hence it is, despite this difficulty, that the trivium must precede the rest of the disciplines.

1. In *Boetium de Trinitate*, q.5, a.1, ad 3.

2. In *VI Eth.*, lect.7, n.1211.

3. J. OF ST. THOMAS, *Curs. phil.*, t.1, p.265a30.

Once the priority of logic as a predisposition for the other disciplines has been established, the principle of proceeding from what is easier to what is more difficult will guide us in the study of the different arts of the trivium. After grammar, it would seem proper to proceed from poetry on through the rest of the logical arts. There may very well be some overlapping in these studies, but the order of their more or less perfect acquisition may well be in the reverse order of St. Thomas' list, that is from the more to the less perfect.

Furthermore, it seems certain that none of the arts of the trivium can be learned without a very considerable material experience in the various intellectual disciplines. Logic is an investigation that reason makes into its proper acts. It is on these acts, that is to say on first intentions, that the second intentions of logic are founded. In order that there be a subject for it to study, logic must follow an adequate intellectual experience.

It is obvious that the order of studies given by Aristotle and St. Thomas depends on the rest of their system. If man is the highest thing in the universe, then political prudence and not wisdom is the highest pursuit open to man, and studies will have to be ordered accordingly. This is obviously not the place to discuss such a complicated question. It will be sufficient to point out that the order of studies given presupposes that there are things vastly superior to man, things that are in no way subject to his practical action, and that man is perfected by knowing them with as much certainty as possible.

Cicero in *De Oratore* and Quintilian in the *Institutes of Oratory* suppose that the practical and especially the political life is the highest thing for man and so they order all studies to rhetoric. In this system, philosophy becomes a kind of ornament that the *rhetor* should have in order to elaborate his discourses and to give them a certain solemnity.

Those who think that all human institutions are indefinitely perfectible, and that their modification in view of more satisfying experience is the main job of education, will emphasize those disciplines that change material conditions and so change society. Dewey has worked out education in this way.

A perversion not unlike this is the theory of those who would make all education serve to defend the faith. This is a perversion because it deflects the attention from what is superior to us and directs it toward something purely accidental, namely the infinite varieties of error¹. A corrective of this attitude is offered by St. Thomas' statement that the duty of a wise man is first of all to meditate on the truth, to declare to others what he has obtained through meditation, and to refute error. It is notable that the refutation of error comes only in the third place as is fitting, since it is a task that can best be accomplished in function of the other two pursuits.

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1. ST. THOMAS, *Contra Gentes*, I, Proemium.