

# The Nature of the Liberal Arts

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THE war has had a paradoxical influence upon the higher learning in America. It has simultaneously stepped up two contrary, and to some extent conflicting, educational tendencies. For it has made these two things perfectly clear: first, that in the struggle for existence in our modern scientific and technological society only the fittest in science and technology can hope to survive; secondly, that if the modern mind becomes completely absorbed by science and technology no one can hope to survive. It has thus brought into sharp focus the great importance of steady progress and high perfection in scientific and mechanical training on the one hand, and the urgent need of some other type of education on the other. This other type of education has been rather generally described as training in the liberal arts.

Now while patrons of scientific and technological education usually have a fairly clear notion of what science and technology are supposed to be, those who have been pleading the cause of liberal arts education have rarely shown themselves ready to give an exact definition of the nature of the liberal arts. As Mark Van Doren has pointed out, " ' colleges of the liberal arts ' are seldom challenged to defend or explain such a title; and out of the thousands who annually become ' masters ' of the same arts, proceeding thence to teach under their sign, only a handful ever know what they have been dubbed masters of." <sup>1</sup>

There is probably an explanation for the lack of general agreement on the nature of the liberal arts. For the term has seen a lot of history; and history has a way of playing with terms, of rubbing out and blurring the sharp outlines of their

<sup>1</sup> *Liberal Education* (New York, 1943), p. 72.

meanings. There may be reasons to suspect that the expression has not always had exactly the same meaning in history, and that it is not susceptible of definition except in a fairly loose and general way. On the other hand, an attempt to disengage it from the flux of history and to submit it to some kind of philosophical analysis might very well prove rewarding. The purpose of this article is to investigate the nature of the liberal arts from the point of view of Thomistic philosophy. We shall attempt to answer the question: what precise meaning must the term *liberal art* have for the Thomist and for the educator who is committed to Thomistic principles.

The task is not easy, for the material is extremely meager. Nowhere in St. Thomas is there an *ex professo* treatment of the question. There are relevant texts, but they are few and incidental. Moreover, in the writings of Aquinas both the term *liberal* and the term *art* have a much broader reach than the phrase *liberal art*. There are a great many arts which are not liberal, and a great many liberal studies which are not arts. All this makes it extremely easy to lose one's way.

As a first step, it might be well to try to give some sort of definite meaning to the term *liberal* as it is applied to knowledge. In attempting to show, at the beginning of the *Metaphysics*, that wisdom is sought for its own sake and not for any utilitarian end, Aristotle remarks: "as the man is free, we say, who exists for his own sake and not for another's, so we pursue this as the only free science, for it alone exists for its own sake."<sup>2</sup> St. Thomas' commentary on this remark is revealing:

A man can truly be said to be free if he exists not for the sake of someone else, but for his own sake. For slaves belong to their masters, and work on their masters' account, and receive from them whatever they acquire. Freemen, on the contrary, belong to themselves in so far as they acquire things for themselves and work for themselves. Now

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<sup>2</sup> *Met.* I, c. 2, 882 b 25.

this science alone (metaphysics) is for its own sake, and consequently it alone among all the sciences is free.<sup>3</sup>

It is clear that for Aristotle and Aquinas a discipline may be said to be liberal if, like a freeman, it exists for its own sake and not for the sake of anything else, if it is its own end and not intrinsically ordained to any end beyond itself.

But Aristotle seems to be saying much more than this. He seems to be insisting that metaphysics is the only discipline which possesses this liberal character. And if that is true, all other studies are necessarily excluded from a liberal education.

Aquinas recognizes the difficulty and promptly sets about solving it:

It must be noted that what has just been said can be understood in two ways. One way of interpreting the phrase "this science alone" would give it a generic meaning so as to have it signify all speculative science in general. And indeed it is true to say that only this genus of the sciences is sought for its own sake . . . The other way of interpreting it would have it mean specifically that philosophy, or wisdom, which is concerned with the highest causes; for among the highest causes there is also the final cause, as was said above. Hence it is the task of this science to consider the last and universal end of all things. And thus all other sciences are ordained to this science as to their end. Hence this science alone is sought for itself in the fullest sense.<sup>4</sup>

Metaphysics is, indeed, the only liberal discipline in the fullest and most perfect sense of the term. By the very fact that it deals with the highest causes of all reality, it not only is not ordained to anything outside the limits of the mind itself, but it is not even ordained to any higher science within the mind.<sup>5</sup>

<sup>3</sup> *In I Met.*, lect. 3, n. 58.

<sup>4</sup> *Ibid.*, n. 59.

<sup>5</sup> We are speaking here only of the purely natural order, of course. Whereas in the liberal education of the pagan, metaphysics is the focal point and the culminating achievement to which everything else is ordained, in the liberal education of the Christian, theology is the most liberal of all the sciences, and every other study, including metaphysics (indeed, especi-

There are, however, other disciplines which, though subordinated to metaphysics, can, nevertheless, be truly called liberal because they are ends in themselves in the sense that they are not ordained to anything outside the intellect. In them knowledge is sought for its own sake, and not for the sake of something in the realm of action and production. From this point of view, all the speculative disciplines deserve to be called liberal. And if we consult the other texts in which St. Thomas applies this term to knowledge, we shall find that he always understands it in this sense.<sup>6</sup>

But while it is clear that in the Thomistic tradition liberal knowledge means theoretical knowledge, it is not so clear, perhaps, how the term *liberal*, thus understood, can be applied to the term *art*. Many would have difficulty in associating a notion that implies speculation and theory with the notion of art. For theoretical knowledge and artistic knowledge are usually considered to be antithetical, and it is not easy to see what kind of unity can be established between them. This is a serious problem—perhaps the most crucial problem in the whole question of the liberal arts. But before it can be faced, a prior problem must be considered. What is the precise relation between liberal studies and liberal arts? Are the expressions coterminous? Are all liberal studies at the same time liberal arts?

The second chapter of the eighth book of the *Politics*, which discusses the nature of liberal knowledge and liberal education, might easily lead one to believe so. Aristotle uses the terms *μάθησις*, discipline, *τέχνη*, art, and *ἐπιστήμη*, science, without indicating that he has any difference of meaning in mind. And the

ally metaphysics) must be ordered to it. The ordering of metaphysics to theology is, of course, something quite different from the ordering of the other sciences to metaphysics.

<sup>6</sup> Cf. e. g. *Summa Theol.*, I-II, 57, 3, ad 3; *In Boeth. de Trinitate*, V, 1, ad 3, etc.

English translators of this passage have felt free to translate his expression *liberal science* as *liberal art*.<sup>7</sup>

After making an historical study of our problem, John Wise tells us in *The Nature of the Liberal Arts* that the expressions *liberal arts* and *liberal education* may be taken as practically synonymous.<sup>8</sup> It may be readily admitted that historically there has been considerable fluidity in the use of the term *liberal art*. Yet, in the midst of this fluidity, there has for many centuries been a persistent tradition in western culture which restricts the term to a few well defined studies—the three studies of the trivium: logic, grammar, and rhetoric, and the four studies of the *quadrivium*: arithmetic, geometry, music, and astronomy. It would seem that an historical study of the nature of the liberal arts should try to explain this persistent tradition, should try to discover what these seven studies have in common that enables them to be called arts and what distinguishes them from a good many other studies which in the same western tradition have always been considered liberal.

But we are interested not so much in the general historical meaning of the liberal arts as in the meaning they had for St. Thomas. In Father Wise's chapter on Aquinas we find the same loose and broad acceptance of the term that runs throughout the book, and nowhere is there an attempt to determine whether or not St. Thomas had any definite, clear-cut theory on the nature of the liberal arts. Yet the few texts in which the Angelic

<sup>7</sup> Thus Benjamin Jowett, (*Basic Works of Aristotle*, ed. R. McKeon [New York, 1941]), renders Aristotle's *ἐλευθέριοι ἐπιστήμαι* (1337 b 15) as *liberal arts*. W. L. Newman in his commentary on this text writes: "The term *ἐλευθέριοι ἐπιστήμαι* in its Latin rendering 'artes liberales' had a long subsequent history." *The Politics of Aristotle* (Oxford, 1902), III, 509. As a matter of fact, however, the Latin translations of this passage, both the *versio antiqua* and the *versio recens* render Aristotle's phrase accurately as 'scientiae liberales.' Cf. *In Octo Libros Politicorum Aristotelis* (Quebec, 1940), p. 406. In explaining this phrase the Thomistic commentary also uses the expression *scientiae liberales*. *Ibid.* p. 410.

<sup>8</sup> (Milwaukee, 1947), pp. 14-16.

Doctor treats the question make it abundantly evident that he had a very well defined theory, and that in this theory the liberal arts are far from being synonymous with liberal education.

The following passage from the *De Trinitate* throws the whole question into clear focus:

The seven liberal arts are not a complete division of theoretical philosophy, but, as Hugh of St. Victor says in III *Didascalon*, while certain other divisions are omitted, these are listed because it was in them that those who wanted to learn philosophy were first trained; hence these subjects are known as the *trivium* and the *quadrivium* because it is by them as though by certain roads that the eager mind enters into the secrets of philosophy. This is in agreement with the statement of the Philosopher who says in II *Metaph.* that the method of a science should be sought before the sciences themselves; and the Commentator says in the same place that before all the other sciences one ought to learn logic which teaches the method of all the sciences, and to logic the *trivium* pertains. (The Philosopher) also says in the VI *Ethic.* that mathematics can be learned by children, but not physics, which requires experience. From this we are given to understand that logic should be learned first, and after that, mathematics, to which the *quadrivium* pertains; and so by these roads, as it were, the mind is prepared for the other physical disciplines. Or the reason why among the other sciences these studies are called arts is that they involve not only knowledge but also a kind of work—a work that is immediately of the mind itself, such as to form a construction, a syllogism, and a speech, to number, to measure, to compose melodies, to compute the course of the stars. The other sciences either do not have any work, but only knowledge, such as divine science and natural science, and hence cannot be called arts, since art is a making reason as is said in VI *Ethic.*; or they have a corporeal work, like medicine, alchemy, and the like. Hence these latter cannot be called liberal arts because activities of this kind pertain to that part of man by which he is not free, namely the body. As for moral science—although it is concerned with operation, the operation is not an act of science but an act of virtue, as is evident in V *Ethic.* Hence it cannot be called an art; rather, in these operations virtue assumes the place of art, and so the ancients defined virtue as

the art of noble and well-ordered living, as Augustine says in *X De Civ. Dei*.<sup>9</sup>

What St. Thomas is saying in this passage seems to come down to this: intellectual pursuits which are speculative but which do not involve construction are liberal, but they are not arts; intellectual pursuits which involve construction but which do not involve speculation are arts, but they are not liberal; only those intellectual pursuits which involve both speculation and construction, or, in other words, which construct in the speculative order are liberal arts. But in order to bring out more fully the meaning of this conclusion several distinctions are necessary.

In the first place, let us recall the distinction between speculative and practical knowledge. These two types of knowledge differ by their ends: the end of speculative knowledge is truth; the end of practical knowledge is an operation, a work to be done or made.<sup>10</sup> The first has its perfection within the limits of the intellect; the second is intrinsically ordained to something outside the mind, something in the realm of action and production. Within the practical order itself, there is the further distinction between universal, theoretical practical knowledge on the one hand, and completely practical knowledge on the other.

The first is the realm of practical science—the science of doing and the science of making. While essentially practical, it is under a certain aspect speculative, because it is universal, abstract, and theoretical. The second is the realm of prudence and art, in which the mind comes to grips with the singular, concrete, existential order.

With these distinctions in mind we are now in a position to determine the exact nature of the liberal arts. Since the meaning of the term *liberal* has already been discussed, it is particularly the term *art* that needs clarification. Sometimes (though rarely)

<sup>9</sup> *In Boeth. de Trinitate* V, 1, ad 3.

<sup>10</sup> Cf. *In III De Anima*, lect. 15, n. 820; *In II Met.*, lect. 2, n. 290; *In Boeth. de Trinitate*, V, 1, c.; etc.

Aquinas uses this term in a broad and loose sense which includes all universal knowledge.<sup>11</sup> But ordinarily he understands it in the strict and proper sense defined in the sixth book of the *Ethics*,<sup>12</sup> which implies a process of making that is a transitive activity finding its fulfillment in external matter.

It would seem that neither of these two meanings can apply to the liberal arts. For on the one hand, the broad meaning does not necessarily signify a process of making, and, as we have seen in the passage from the *De Trinitate*, the liberal arts necessarily involve such a process. On the other hand, the sense defined in the *Ethics* signifies a process of making, but a process involving transitive activity which perfects external matter. The first use of the term includes liberal knowledge, but knowledge which is not art in the proper sense; the second signifies art in the proper sense, but art which is not liberal. It would seem that the liberal arts must fall somewhere between these two.

This conclusion could easily lead one to suspect that the liberal arts must be assigned to the realm of practical science. For the first meaning of the term *art* includes even formally speculative knowledge, while the second meaning is restricted to completely practical knowledge. In between these two, and sharing in some way in the nature of both, lies practical science. Here we have at once both speculation and making—the two elements which seem to be required for a discipline to be liberal and artistic at the same time. As a matter of fact, the liberal arts have sometimes been presented in this light; they have been described as though they were a theory of making.

Yet a moment's reflection will show that this is not the solution. Medicine is a practical science, but it is not a liberal art, as St. Thomas takes pains to point out in the *De Trinitate*. And the reason he gives excludes all of the practical sciences. Though these sciences do not necessarily issue into something outside the

<sup>11</sup> Cf. e. g. *In I Meteor.*, lect. 1, n. 1.

<sup>12</sup> *In VI Eth.*, lect. 3, nn. 1153-1160.



limits of the intellect, they are intrinsically ordained to that; they are ordered to something besides the perfection of the intellect itself. As a consequence, they do not deserve to be called liberal.

We are thus brought to the conclusion that the liberal arts must be formally speculative knowledge. And this leaves us with the problem of how there can be construction, real making, within the confines of the mind itself.

There are two texts in the *Summa Theologica* which point the way toward the solution of this problem. In discussing the nature of prudence in the *Secunda Secundae*, Aquinas endeavors to show that this virtue is found in the practical intellect but not in the speculative intellect. In doing so he encounters the objection that, according to Aristotle in the sixth book of the *Ethics*, art and prudence belong to the same "part" of the soul, and since besides the practical arts there are also speculative arts, that is the liberal arts, it would seem to follow that there is also such a thing as speculative prudence as well as practical prudence. If the liberal arts were nothing but a theory of making, if they were merely practical science, St. Thomas could have answered the objection very simply by saying that just as there is a theory of making in practical science which corresponds to art in completely practical knowledge, so there is also a theory of doing which corresponds to prudence, namely moral science. Actually, his answer is something quite different:

Every application of right reason to the making of something belongs to art; but to prudence belongs only the application of right reason to those things with which counsel deals; and these are of such a nature that there are no determined ways of arriving at the end, as is stated in *Ethic.* III, 3. Since then the speculative reason makes certain things, such as syllogisms, propositions and the like wherein the process follows certain and determined ways, it follows that in respect to things of this kind the notion of art can be realized, but not the notion of prudence. So there is such a thing as speculative art, but not speculative prudence.<sup>13</sup>

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<sup>13</sup> *Summa Theol.*, II-II, 47, 2, ad 3.

Art is much more intellectual than prudence and therefore has more in common with the speculative virtues which perfect the mind in its purest intellectual operations.<sup>14</sup> The notion of making does not by its very nature necessarily involve something outside the confines of the mind. The notion of prudential action, on the other hand, necessarily does. For unlike both the virtue of art and the speculative virtues, prudence is at once both an intellectual and a moral virtue. It necessarily involves a rectification of the appetite. Moreover, prudence proceeds *per vias determinandas*. There are no absolutely fixed and necessary ways laid down for it; the ways of prudence must be freely chosen. Art, on the contrary, proceeds *per vias determinatas*; there are fixed and necessary ways it must follow. This shows that art is much less immersed in contingency than prudence. Its determined and necessary ways give it something of the character of necessity that is proper to the purely speculative order.

All this helps us to understand how it is possible to have a process of making, to have an *opus* within the limits of the reason itself, even though it is never possible to have a prudential action there. And this brings us back to the passage from the *De Trinitate* in which St. Thomas tells us that only those sciences deserve to be called arts which involve not only knowledge but a construction:—*opus aliquod, quod est immediate ipsius rationis*: a construction that is immediately of the reason itself, that is to say, a construction that remains within the limits of the mind.

John of St. Thomas, in attempting to prove in his *Ars Logica* that logic is a liberal art, brings out more fully the reason why there can be arts which remain within the limits of the mind as well as arts which reach out beyond it.<sup>15</sup> He points out that

<sup>14</sup> *Ibid.*, I-II, 57, 3 and 4; 58, 5, 2.

<sup>15</sup> *Curs. Phil.* t. I, pars II, q. 1, a. 2, ed. Reiser, pp. 257-259.

all art requires two things: matter and form. The matter is the material out of which the construction is made; the form is the *regula dirigens*, the law or order which directs the construction and which is imposed upon the matter. Art demands that these two factors have contrary properties. The matter must be indetermined and plastic; the form must be certain and determined. If the matter is already fully determined, if there is no indifference in it, art is impossible because the material is not susceptible of regulation and composition. If, on the other hand, the form is not certain and determined, but contingent, art is also impossible, since, as we have seen, art differs from prudence precisely because it proceeds *per vias determinatas*, whereas prudence proceeds *per vias determinandas*.

Now in the liberal arts both of these requirements are realized, though not in the same way as in the practical arts. Within the mind itself there is something that corresponds to the plastic and malleable matter of the practical arts. Man's very thought is malleable in the sense that it can be ordered and composed according to a determined *regula dirigens*. It can, for example, be constructed into a syllogism. A syllogism is something made by the mind within the mind. And the logical rules which guide and order this construction are something certain, fixed, and determined. Because the form of the liberal arts is something certain and determined, and because the matter is something within the mind itself, they can be speculative sciences as well as arts. It is the opinion of John of St. Thomas that the liberal arts differ from the practical arts more from the point of view of their matter than from the point of view of their form. There is a vast difference between the spiritual matter of the liberal arts and the physical matter of the practical arts; the indetermination, indifference, and plasticity of the latter is immeasurably greater than that of the former. But from the point of view of the *certae et determinatae viae* the two arts come closer together. Indeed, John of St. Thomas believes that from

this point of view the term *art* is used univocally when applied to them.

There is another passage from the *Summa Theologica* which throws light upon our problem.

Even in speculative matters there is something which has the nature of work, e.g. the making of a syllogism or of a fitting speech, or the work of counting or measuring. Hence the speculative habits which are ordained to such works of the reason are, by a kind of comparison, called arts, that is to say liberal arts, in opposition to those arts that are ordained to works done by the body, which are, in a fashion servile, inasmuch as the body is in servile subjection to the soul, and the source of man's freedom in his soul. On the other hand, those sciences which are not ordained to work of this kind are called sciences simply, and not arts. And just because the liberal arts are more noble it doesn't follow that the notion of art is more proper to them.<sup>16</sup>

Besides confirming conclusions already drawn from the other texts, this passage brings out the fact that, although the liberal arts are the most noble of all the arts because their construction takes place within the very soul of man, within the very principle from which all of man's liberty flows, they are not art in the most strict sense of the term. It is only in the practical arts, in the arts defined and analyzed in the sixth book of the *Ethics* that the term has its fullest and most proper meaning.

It is clear, then, that the liberal arts are both sciences and arts at the same time, and that they stand in between the sciences which are not arts and the arts which are not sciences.<sup>17</sup> This

<sup>16</sup> I-II, 57, 3, ad 3.

<sup>17</sup> Even though some of the liberal arts may not realize the perfect form of science, they are all rooted in logic or mathematics, and are, in a way, extensions of these sciences. John of St. Thomas has doubts about the strict scientific character of grammar and rhetoric. "Grammatica autem et rhetorica non videntur esse scientiae nec tractant de quidditatibus obiectorum et connexionibus necessariis, sed de modo loquendi et elegantia, nec procedunt definiendo et resolvendo aliquid in sua principia." (*Curs. Phil.* t. I, Pars II, q. 1, a 5. p. 277.) "Rhetorica autem at grammatica vel non sunt scientiae, quia non procedunt demonstrative, vel non sunt rationales, sed sermocinales." (*Ibid.*, pars II, q. 27, a. 1, p. 826.)

intermediate character is often a source of confusion about their nature. Because they are speculative sciences, it is easy to overlook the profound difference between them and the other speculative sciences and thus extend the term *liberal arts* to all speculative knowledge and even to practical science. We have already noted how prevalent is the tendency to give them this loose and improper meaning. On the other hand, because they are arts, it is easy to overlook the fact that they are speculative sciences and conceive them after the manner of the practical arts. There is in fact a tendency among modern educators to try to teach the liberal arts as though they were habits of the practical intellect completely empty of "subject matter." The following passage from Mortimer Adler is a good example of this tendency:

My thesis here is simply that mastery of the liberal arts must precede the mastery of the fundamental subject matters, which constitute the matter of the speculative virtues. Though wisdom comes first in the natural order of the virtues—graded according to their intrinsic excellence—the arts, the least of the intellectual virtues, come first in the temporal order, the order of human development . . . I do not mean that the liberal arts are ever ultimate ends, ends in themselves. On the contrary, they are only intermediate ends, and as such, means to further and higher ends. They are specifically the indispensable means to the speculative virtues as ends. The acquisition of the arts is for the sake of mastering subject matters . . . Children are too young, too inexperienced, too unstable, to acquire wisdom. Hence, they should be given what they, at their age, are able to receive: the formation of the artistic, not the speculative, virtues.<sup>18</sup>

The liberal arts are virtues of the speculative intellect, not of the practical intellect as Adler seems to suppose. And if they are propaedeutic it is not because all of them fall most easily within the range of the young mind. As a matter of fact, logic, the first of the liberal arts is, as St. Thomas points out, one of the most difficult of all studies.<sup>19</sup>

<sup>18</sup> "The Order of Learning" in *The Catholic School Journal*, XLI, 10, 333-334.

<sup>19</sup> Cf. *In Boeth. de Trinitate*, VI, 1.

The liberal arts are not mere preparations for the intellectual virtues, as some seem to believe.<sup>20</sup> All of them are intellectual virtues in themselves. They are propaedeutic only because there are reasons which demand that they be acquired before the other intellectual virtues. But before attempting to analyze these reasons, we must try to determine which speculative virtues are liberal arts.

In the passage from the *De Trinitate* quoted above, St. Thomas, in discussing the propaedeutic character of the liberal arts, mentions two speculative virtues: logic and mathematics. And if we examine the examples of the liberal arts which he gives in the other texts, it becomes evident that all of them can be reduced to these two sciences. What is there about these two that is not found in any of the other speculative sciences? After all that has been said about the nature of the liberal arts, the answer is obvious: in these two sciences, and in these two sciences alone, there is a process of making.

All too often the artistic character of the liberal arts is presented in such a way as to make it consist in a certain facility and skill imparted to the mind which enable it to operate with ease and indefectibility. But if the essential nature of the liberal arts consisted merely in facility and skill in intellectual operation, then all the intellectual virtues would be liberal arts, for every operative virtue gives operational facility, and indefectibility to its subject. Logic is not an art simply because it gives the mind skill and undeviating perfection in dealing with logical problems. Mathematics is not an art simply because it perfects the intellect in such a way as to enable it to think mathematically with a high degree of facility and infallibility. For metaphysics and the science of nature also give to the intellect great skill and indefectibility in dealing with the prob-

<sup>20</sup> Cf. Mark Van Doren, *Liberal Education*, *op. cit.*, p. 76: "The liberal arts are a preparation for the intellectual virtues, and at the same time they are practiced well only by those who have intellectual virtue."

lems of being and of motion, and yet neither of them is a liberal art. In other words, the making process which constitutes a liberal art does not consist in making the mind operationally perfect with regard to a certain scientific object.

The artistic character of logic is very often misrepresented. It is described in such a way as to limit it to *logica utens*. As a matter of fact, however, logic is a liberal art not merely qua *utens*, but qua *docens*. This distinction between *logica docens* and *logica utens* is well known. Logic is called *docens* in so far as it teaches in a scientific manner the rules which direct the intellect in its operations; it is called *utens* in so far as it puts these rules into execution by applying them to a given matter. As John of St. Thomas suggests,<sup>21</sup> there is a parallel between these two types of logic and the two types of practical knowledge which have to do with making outside the mind: practical science lays down the fundamental general rules which guide the making process, and completely practical knowledge applies these rules in the actual process of making. Because practical science is a science without being an art, and completely practical knowledge is an art without being a science, it is easy to conclude that in the parallel found in the realm of logic, *logica docens* is a science without being an art, and *logica utens* is an art without being a science.

We feel that this view is fundamentally erroneous. While it may be true, as John of St. Thomas holds, that only *logica docens* is a science,<sup>22</sup> it is not true that only *logica utens* is an art. Logic is a liberal art qua *logica docens*. And the reason is this: the very objects with which *logica docens* deals are constructions of the mind. It deals for example with the syllogism and tries to determine its properties. But the syllogism is something which the mind constructs. The very subjects whose proper

<sup>21</sup> *Curs. Phil.*, t. I, pars II, q. 1, a. 5, p. 277.

<sup>22</sup> *Ibid.*, pp. 278-279.

passions, whose scientific properties *logica docens* tries to determine, are subjects made by the mind.

Something similar to this is found in mathematics. In the *Metaphysics* Aristotle and St. Thomas explain how the geometer goes about showing the truth of propositions (e. g. that every triangle contains two right angles, or that every angle described within a semicircle is necessarily a right angle) precisely by a process of construction (e. g. by protracting the base of a triangle, by drawing a line from the angle within a semicircle to the diameter, by dividing certain parts of the figures involved, etc.).<sup>23</sup> In the *Posterior Analytics* a more fundamental illustration of the artistic character of mathematics is given:

We suppose in these (mathematical) sciences those things which are first in the genus of quantity, such as unity and line and surface, and other things of the same kind. Having supposed these, we seek certain other things through demonstration, such as the equilateral triangle, and the square in geometry, and other similar things. These demonstrations are said to be operative as it were, as, for example, to construct an equilateral triangle on a given straight line. When this is found, we then prove other passions of it, as for instance, that its angles are equal, or something else of the same kind.<sup>24</sup>

Here we find something very similar to what we said about logic. Just as in logic the mind constructs subjects and then proceeds to determine the scientific properties of these constructions, so in mathematics, given the fundamental quantities, the mind can build certain structures and then determine scientifically their proper passions.

In making these structures, however, the mind is not left to its own fancy. It is guided by the basic properties of quantity itself. This remark is necessary to make it clear that the construction about which we have been speaking is something quite distinct from the free construction of modern postulational

<sup>23</sup> *In I Met.*, lect. 10, nn. 1888-1894.

<sup>24</sup> *In I Post. Anal.*, lect. 2, n. 5.



mathematics. As we shall see presently, this latter construction is, in a sense, rather logical than mathematical (in the classical meaning of the term), and pertains more to the *trivium* than to the *quadrivium*. For the moment the point at issue is this: in none of the other sciences besides logic and mathematics is there construction within the mind; in all the other sciences the mind knows without making, because their subjects are simply given.

But though none of the other sciences constructs, there are extensions of both logic and mathematics beyond the domains that are strictly proper to them. In the *trivium* logic is extended beyond its own immediate and proper confines into grammar and rhetoric. Both grammar and rhetoric are rooted in logic and, in that sense, are logical arts. But they involve something more than is included in logic in its strictest and most formal sense. In the *quadrivium* mathematics is extended to include branches of physico-mathematical knowledge. Mathematics in the Aristotelian and classical sense is divided into two formally distinct sciences: geometry and arithmetic. In the Middle Ages each of these two sciences was applied to the study of something physical: geometry to the heavens to give the science of astronomy, arithmetic to sound to give the science of music.

In the Hebrew and Christian tradition the number seven has had a sacred character, and it seems that the seven liberal arts were associated historically with the seven pillars of the house of wisdom: "wisdom hath built herself a house, she hath hewn her out seven pillars."<sup>25</sup> But we may well wonder just how sacred the number is when applied to the liberal arts. Is it something fixed and absolute and exhaustive, or are there other liberal arts besides the traditional seven?

St. Thomas' *prooemium* to the *Posterior Analytics* throws abundant light upon this question. For there, in outlining the

<sup>25</sup> *Prov.* IX, 1.

various branches of logic which deal with the third operation of the mind, he enumerates the following: judicative logic, which has to do with demonstration in the strict sense and therefore with science; dialectics, which is the art of probable reasoning that gives rise to opinion; rhetoric, which is the art of persuasion that gives rise to suspicion; and poetic, which is the art of making fitting representations. This text shows that in the logical arts there is nothing sacred about the number three. But it also gives rise to several questions. Why is grammar omitted from this enumeration of the logical arts? On the other hand, why are dialectics and poetics left out of the traditional *trivium*?

The omission of grammar in this text from the *Posterior Analytics* can be explained by the fact that Aquinas is enumerating the arts that are proper to the third operation of the mind. Grammar has to do with all forms of verbal expression and consequently cannot be restricted to any one part of logic. As a matter of fact, there is no special Aristotelian treatise for grammar, as there is for the other logical arts.

The position of poetic is somewhat more problematic. For many the inclusion of poetry in logic is a sizable intellectual scandal, because it seems to reduce poetry to a purely rational type of knowledge. But St. Thomas takes pains to avoid this scandal by distinguishing poetry very carefully from science, dialectics and rhetoric. What he is trying to say by these distinctions is this: poetry does not try to demonstrate anything like science; it does not try to convince by a purely intellectual disputation like dialectics; it does not try to persuade, or to lead to moral action like rhetoric. What poetry does, says St. Thomas, is to paint a pure picture, "a fitting representation." But if poetry is so unlike any of these other logical arts why is St. Thomas justified in including it in logic? The answer is that if logic is the science and the art which deals with the ordering and composing of ideas in the mind, then surely poetic is a

part of logic, for in poetic there is an ordering and composing of ideas, even though the order and composition is something quite different from that found in science, dialectics, or rhetoric.

This answer gives rise to a further problem. For if poetic is one of the logical arts, why is it not included in the *trivium*? Perhaps the solution to this problem lies in the fact that in the Middle Ages poetry was often left to be considered along with music. As a matter of fact, Boethius in his treatise *On Music* states that it is the task of the musician (*musicus*) to judge of the works of poets.<sup>26</sup> This close association of poetry and literature with music goes back to the Greeks.<sup>27</sup>

And what about dialectics? Why is it included by St. Thomas in the logical arts and yet excluded from the *trivium*? In order to solve this problem we must have a clear notion of what dialectics is. In later scholasticism it has come to be identified with the so-called minor logic, and some authors have erroneously projected this meaning back to Aristotle and St. Thomas.<sup>28</sup> As a matter of fact, the genuine peripatetic notion of dialectics is something quite different from that of minor logic. Aristotle and Aquinas make this clear in the first book of the *Posterior Analytics* where they discuss the relations between logic, dialectics and metaphysics.<sup>29</sup> These three disciplines, they say, have something in common: they all deal with the most universal considerations because they all have being as their object. But while metaphysics deals with real being, logic and dialectics deal with logical being—*ens rationis*, i. e. second intentions.

<sup>26</sup> *De Musica*, I, 34 (Migne P. L. Vol., LXIII, col. 1196): "Isque musicus est cui adest facultas secundum speculationem rationemque propositam ac musicae convenientem de modis ac rythmis deque generibus cantilenarum ac de permixtionibus ac de omnibus de quibus explicandum est ac de poetarum carminibus iudicandi."

<sup>27</sup> Cf. *Republic* II, 376; III, 398.

<sup>28</sup> Cf. John Wise, *The Nature of the Liberal Arts*, op. cit., p. 21: "Dialectic, beginning with Aristotle, will assume in the form of minor logic its true propaedeutic nature . . ."

<sup>29</sup> *In I Post. Anal.*, lect. 20, nn. 5-6.

In so far as both dialectics and logic deal with *ens rationis* the two are identified, that is to say, dialectics is a part of logic. Yet from another point of view it is necessary to make a distinction between them. For logic in its most proper and strict meaning deals with second intentions in such a way as to remain within the limits of *ens rationis*. Dialectics, on the other hand, attempts to go out beyond *ens rationis* by applying it to *ens reale*. Dialectics uses principles which involve logical being in an attempt to manifest something about real being. It is a process by which the mind, starting from the *modus intelligendi*, moves towards the *modus rei*. In other words, it is an attempt of the intellect to draw from mental constructs conclusions with regard to reality.<sup>30</sup>

It is clear from this passage of the *Posterior Analytics* that from one point of view dialectics is a part of logic and from another something distinct from it. Because it is something distinct from it, St. Thomas in the *proëmium* to the *Posterior Analytics* is justified in giving it special mention as one of the logical arts. On the other hand, in so far as it is a part of logic it is included in the first art of the *trivium* and does not need special mention. A sign of the fact that dialectics is not related to logic in the same way as grammar or rhetoric or poetic is that the *Topics*, the Aristotelian treatise on dialectics, is considered a part of the *Organon*, whereas ordinarily the *Rhetoric* and the *Poetics* are not.

This consideration of the nature of dialectics brings us to a consideration of the quadrivial arts, for in modern times dialectics has become a bridge between the *trivium* and the *quadrivium* because of the recent developments of mathematics. As we have seen, the traditional *quadrivium* contains two mathematical sciences and two branches of physico-mathematical knowledge.

<sup>30</sup> For a further explanation of the nature of dialectics, cf. *In IV Met.*, lect. 4, nn. 572-574.

Once again the question arises about the sacredness of this number.

In order to give an adequate solution to this question it is necessary to distinguish between the classical Aristotelian notion of mathematics and the modern notion. In the classical notion, the division of mathematics proper into the two sciences of geometry and arithmetic is exhaustive, for there are only two species of quantity: continuous and discrete—magnitude and multitude. On the other hand, the twofold division of the arts which apply mathematics to the sensible world does not seem to be exhaustive, for it does not include all the areas of physical reality to which mathematics was applied even in the Middle Ages. For example, the science of optics, or what the ancients called *perspectiva*, is not explicitly mentioned in the *quadrivium*.

But as soon as we begin to make room for recent developments, the problem of the mathematical arts becomes immeasurably more complicated. For it would seem that the very notion of mathematics has undergone a profound change since the Middle Ages. For Aristotle and St. Thomas mathematics was a science which studied quantity in the light of the second degree of formal abstraction. But if we are to believe the most eminent modern mathematicians, it no longer has any necessary relation to quantity.<sup>31</sup> As a matter of fact, there is a general trend among modern mathematicians to identify mathematics and formal logic.<sup>32</sup>

Any attempt to give an adequate solution to the problem of this transformation would lie far beyond the scope of this article. All we can hope to do is to point out the direction in which we believe this solution may be found, and to indicate its relevance for the question of the liberal arts.

The instinct of a Thomist is, of course, to seek out formal

<sup>31</sup> Cf. Bertrand Russell, *Mysticism and Logic* (London, 1917), p. 91.

<sup>32</sup> Cf. Russell, *Introduction to Mathematical Philosophy* (London, 1920), p. 194; *Principles of Mathematics* (New York, 1938), pp. 3, 5 ff.

objects whenever there is a question of a distinction between sciences. And as soon as the formal objects of logic and mathematics are examined, it becomes immediately evident that the identification of these two sciences is a great epistemological error. The *ratio formalis sub qua* of mathematics is the second degree of formal abstraction; that of logic is a type of abstraction that falls reductively into the third degree. The *ratio formalis quae* of mathematics belongs properly to first intentions; that of logic is the *ens rationis* which is a second intention.

On the other hand, there are, of course, a good many similarities between these two sciences. Although the object of mathematics is not second intentions, it has something of the character of the object of logic in the sense that, unlike the object of either metaphysics or the science of nature, it is conceived in a way in which it cannot exist in reality.<sup>33</sup> Moreover, as St. Thomas points out, both logic and mathematics deal with formal principles alone.<sup>34</sup> An examination of these similarities and the many others which stem from them will reveal the possibility of establishing a kind of bridge between the two sciences. And it is precisely in the Aristotelian notion of dialectics that this bridge is to be found. For modern mathematics has two significant characteristics. First, it is postulational; it is a collection of structures that the mind has built up from *premises which the intellect itself has posited*. Secondly, these structures are built out of *entia rationis*: the very concepts used are logical entities—entities which the mind has formed rather than abstracted by the second degree of formal abstraction. All this makes it plain that it is more the dialectical habitus than the mathematical habitus which guides the modern mathematician in his work. And in the measure in which modern mathematics is dialectical, it would seem to belong more to the *trivium* than to the *quadrivium*.

<sup>33</sup> *In Boeth. De Trin.*, V, 1.

<sup>34</sup> *De Potentia*, VI, 1, ad 11.

Throughout this whole analysis we have been insisting that the liberal arts are not practical but speculative. But before bringing this discussion to a close it seems necessary to point out that there is, in a sense, an overflow of the liberal arts into the order of practical knowledge. As a matter of fact both music and poetry (and rhetoric, too, though to a lesser extent), have necessary extensions into the realm of practical art, which constructs outside the mind. The art of music has to do with the ordering of sound, which is something physical; it aims at the right production of sound through physical action and the use of corporeal organs, either the organs of the human body itself, as in vocal music, or the material instruments added to the organs of the body, as in instrumental music. Poetry and rhetoric may also be said to extend into the realm of practical art in the sense that both of them in their construction depend upon the physical aspects of the word.

Since the practical art of these disciplines is rooted in a speculative art, it may be called liberal in a sense that does not apply to the pictorial or the plastic arts which, though they construct *for* the mind, do not construct *in* the mind but in matter. But while both rhetoric and poetry on the one hand and music on the other are liberal arts, it would seem that the former are more liberal than the latter, and have a stronger claim to a central place in the college curriculum. Rhetoric and poetry are far less dependent upon the physical than music, and their construction is more fully and more perfectly within the mind. Though the construction of rhetoric and poetry involves sound, it remains essentially a composition of ideas. That is why both rhetoric and poetry are called *doctrina*. Poetry is the *infima doctrina*, the last of the disciplines which deserve to be called doctrine. Only that part of music which is a *scientia media*, a physico-mathematical science, may be called doctrine. Actually, there are at least three branches of music: the physico-

mathematical science just mentioned in which mathematical number is applied to physical sound, the art of the composer, and the art of the performer. The art of the composer of music is less liberal than the art of the composer of poems or of persuasive speeches because he is not composing ideas—at least in the same sense as the poet and the rhetorician. At the same time, it is more liberal than the art of the pictorial or the plastic artist. A sign of this is found in the fact that the musical composer can bring his work to full and perfect existence in silence (though, of course, previous experience with sound is required). The painter and the sculptor cannot bring their work into being independently of the actual use of paint and stone and bronze.

Rhetoric, poetry and music are more liberal than painting or sculpture not only from the point of view of construction *in* the mind, but also from the point of view of the construction *for* the mind in the sense that they address themselves more directly and immediately to the mind. The plastic and the pictorial arts aim directly at producing a lasting physical transformation in matter, and they speak to the mind only through this permanent transformation. In poetry, rhetoric and music there is no such permanent change in matter; the communication with the mind is more immediate and direct, and in a sense more total. But in so far as painting and sculpture, unlike the useful arts, construct *for* the mind, they may, by an extension of the term, be called liberal, even though, like the useful arts, they do not construct *in* the mind, but in matter. It is important, however, to see that these arts are not liberal in the sense in which the speculative arts are liberal.

Aristotle and St. Thomas distinguished between the liberal and the servile arts, and included in the latter all the arts which construct *in* matter even though they may construct *for* the mind. Our modern division of the fine arts, which correspond



to what the ancients called the arts of imitation, overlap the liberal arts on the one hand in music, poetry and rhetoric, and the servile arts on the other in dancing, painting and sculpture.

Just as music, poetry, and rhetoric are on the border line between the liberal and the fine arts, so architecture is on the border line between the fine arts and the useful arts. Architecture aims at producing a human abode, that is to say, an abode for the whole man, a structure which will be not only a shelter for his body, but also an object of contemplation for his mind. But while architecture belongs to both the fine and the useful arts, it belong more properly to the latter than to the former, since it constructs *primo et per se* for a useful purpose outside the mind and only incidentally for the mind. In a good many other useful arts besides architecture there is also a kind of reaching up into the realm of the fine arts. Man's intellectual nature makes it difficult for him to allow things to remain on the level of pure utility. The human mind tends instinctively to claim as its own the things it produces by making them not merely objects of use, but objects of contemplation as well. The arts of automobile making, shoemaking, furniture making, and, indeed, practically all the arts that are intimately associated with human life, aim at producing not only something which will have the maximum of utility, but also something which will please when seen. But because the primary aim is always something which lies beyond contemplation, they remain essentially useful arts.

Perhaps we may summarize these distinctions by saying that in the speculative arts there is construction *by* the mind, *for* the mind, *in* the mind, and consequently these arts deserve to be called liberal in the fullest sense of the word; in the fine arts there is construction *by* the mind, *for* the mind but not *in* the mind, and these may be called liberal in a loose sense of the term; in the useful arts there is construction *by* the mind, but

neither *for* the mind nor *in* the mind, and these can in no sense be called liberal.

Some authors have presented the liberal arts as though they occupied some kind of intermediary position between the fine arts and the useful arts.<sup>35</sup> It would seem more proper to give the intermediary position to the fine arts. The liberal arts are at the top of the list; they are the most noble of all the arts, even though less perfectly arts than any of the practical arts.

While they are the most noble of all the arts, they are not the most noble of all the liberal studies. They are merely the beginning of the life of contemplation whose final fulfillment and complete realization is wisdom. If the modern world is to be saved from the devastation of science and technology, there must be a return, not merely to the liberal arts, but to liberal education in all its dimensions, and especially to wisdom, which is the culmination of all liberal knowledge.

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<sup>35</sup> Cf. Van Doren, *Liberal Education*, *op. cit.* p. 73: "If the natural arts be set aside as independent of man's control—though this would be misleading, for all of his arts co-operate with them and proceed from them—the human arts that remain fall into the three great classes of useful, liberal, and fine. The liberal arts are always, and properly, left in a middle position between those with which we manipulate objects and those with which we create them—or, if man cannot in reality create, with which we render individual things, such as a hero in story or a form in painting, more luminous than they were."