

7. - Order of Procedure in Logic.

Once the parts of logic have been determined, the next step is the determination of the proper order to be followed in their consideration. The principle governing this order must be sought in the parts themselves.

St. Thomas establishes the order and its necessity in his introduction to his commentary on the Perihermeneias, where his purpose is to fix the place of the Perihermeneias among the books of the Organon. To this end he first indicates the three operations of the reason and then adds :

"Hanc autem operationum primam ordinatur ad secundum, quia non potest esse compositio et divisio, nisi simplicium apprehensorum. Secunda vero ordinatur ad tertiam : quia videlicet oportet quod ex aliquo vero cognito, cui intellectus assensuat, procedatur ad certitudinem accipiendam de ali- quibus ignotis" (1).

The order here indicated is a natural order of dependence : the third operation necessarily presupposes the second, and the second the first.

St. Thomas next designates the books of the Organon concerned with each of these operations - the Predicaments with the first, the Perihermeneias with the second, the Prior Analytics and all that follow with the third. (2) Because these books are each concerned with one of the operations, to designate their order to one another is to determine the order in which the operations are to be considered. St. Thomas thus indicates the order of the books

"ut ideo secundum praedictam ordinem trium operationum, liber Praedicamentorum ordinatur ad librum Perihermeneias, qui ordinatur ad librum Priorum et sequentes" (3).

- (1) - In I Periherm., proemium, n. 1.
- (2) - Ibid.
- (3) - Ibid.

The order of consideration of the parts, then, is determined by the natural order of the operations themselves.

By way of elaboration of the necessity of this order, it may be pointed out that the subject of the science of logic is second intentions. But, since the first operation is presupposed to the others, the second intentions attached to the simple concepts are retained in all compositions and govern those compositions; for this reason a distinct knowledge of the second and third operations is not possible without a distinct knowledge of the first. Similarly, relations of reason attached to the second govern the third. Accordingly, a distinct knowledge of the third is dependent on that of the second. For this reason the order or procedure in the science of logic is determined by the natural order of operations.

The following chapters will be concerned with each of the three parts of logic, establishing the subject of each part and considering certain questions attached to each as it constitutes a separate part of logic. In the case of the first two operations, it is necessary to show how each of these involves in itself some composition of the reason, or work made by the reason, for which a particular direction is required, entirely different from the direction given to argumentation as such.

THE FIRST OPERATION OF THE REASON.1. - Subject of this part of logic.

① For John of St. Thomas the subject of the formal logic of the first operation is the term, of the material logic of the same operation the subject is the disposition of the universals according to the Predicables and Predicaments. A detailed criticism of the term as subject of this part of logic will be given later in the chapter; here it is sufficient to recall that John of St. Thomas arrives at this subject by a resolution of the form of argumentation into its elements rather than by a consideration of the object of this operation and the determined means by which the reason attains this object. With regard to the Predicables and Predicaments, he is right in attaching these to the first operation, but in so far as he considers them only in the measure that a knowledge of them is requisite for the formation of per se propositions, he fails to manifest adequately their role in the direction of the reason.

2 ^A In determining the subject of this part of logic, it is essential that all question of the matter and form of argumentation be set aside as irrelevant. ^B The work of logic is to direct the reason in the attainment of its object; hence the questions to be answered with respect to the first operation are: what is its object? and, what is the instrument through the formation of which the reason attains that object? ^C It is the instrument to be formed that constitutes the subject of this part of logic. ^D Whether the logic that considers it should be

called formal or material can be determined afterwards by an inspection of the natures of the second intentions involved in its formation.

3 ^A The object of the first operation is the simple unknown, the ignotum incomplexum of St. Albert. Such an unknown is known when the reason has attained its essence and can answer the question: what is it? ^B This can be effected only through definition; we know what an object is when we can define it. ^C Definition, therefore, is the principal instrument of the first operation of the reason, and the principal subject of this part of logic, which must, accordingly, teach what the definition is, the kinds of definition, the second intentions upon which the formation of definitions depends, and how to define.

4 ^A A complete knowledge of the art of definition is extremely difficult to attain because, as has been mentioned, there is no extant work of Aristotle, St. Albert, or St. Thomas on this subject. Consequently much of the doctrine about definition must be gathered from scattered passages in the works of St. Thomas and St. Albert and the sum of these in no sense forms a complete treatment. What is necessary here, however, is only to manifest more distinctly that the first operation in itself constitutes a separate part of the subject of logic and for this all that is requisite is to show that the attainment of knowledge of the essences of things through definition involves an advance from the known to the unknown that is governed by second intentions proper to itself.

2. -- Real and Nominal Definition.

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Definition is a kind of discourse which explicitly and perfectly states what the essence of the object is, distinguishing the object from all other things. (1)

In this definition of definition the word discourse (oratio) (2) is the genus (3) and it signifies a composition of words ordered by the reason. That the definition must be such follows from its end, as this is signified by the difference - which states what a given object is. By this is meant that the definition signifies the whole essence, so that there is nothing pertaining to it which is not included in the definition, nor anything in the definition which does not pertain to the essence; since the definition so delimits (de-finit) the essence, it is also called a term. (4) Such a perfect manifestation

(1) - "Est autem terminus sive definitio, quaedam oratio explicite et per partes potentiae et actus quid essentialiter et substantialiter est esse rei definitae, ita quod perfectum esse sit demonstrans, et totum secundum partes, et ordinem ad ultimum, quod respectu omnium praecedentium est actus et complementum" (St. Albert, In I Topi-corum, Tract. II, ch. 2).

(2) - The Latin word oratio, signifying a composition of words ordered by the reason, is difficult to translate into English. The word discourse will be used throughout; although speech or composite expression might also serve. Discourse, as a translation of oratio must be distinguished from discourse which is a translation of discursus and signifies an advance of the reason from the known to the unknown.

(3) - Or at least quasi-genus, since oratio is rather analogous than univocal as said of definition and, for instance, proposition, since the latter is perfect with respect to signification, while the former, because it does not state that anything is or is not, is not so. (cf. St. Albert, In I Prior. Anal., Tract. I, ch. 3).

(4) - "...definitio ideo dicitur terminus quia includit totalitatem rem; ita scilicet, quod nihil rei est extra definitionem, cui scilicet definitio non conveniat; nec aliquid est infra definitionem, cui scilicet definitio conveniat" (In I Periherm., lect. 4, n. 37).

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of the whole essence demands that the definition be composed of names which represent the principles of the object and which represent them as they are actually ordered to one another in the object according to that which is potential and that which is as ultimate act. This cannot be accomplished by one word, but only by a composition of words; from its end, therefore, the definition is a discourse. (1) The manifestation of those intentions that govern the composition of concepts (and therefore of the words that signify them) necessary to effect definition will be the principle work of this chapter.

It must be noted that definition as just described is definition simpliciter. Because it is a discourse which succeeds in manifesting the quid rei it is called real definition. But there is another kind of definition which is definition in a secondary, or participated, sense. This is nominal definition which manifests not the essence of a real object but the essence of a name; it gives, in other

(1) - "Dicit ergo primo, quod omnis definitio est quaedam ratio, id est quaedam compositio nominum per rationem ordinata. Unum enim nomen non potest esse definitio, quia definitio oportet quod distincte notificet principia rerum quae concurrunt ad essentiam rei constituendam, alias autem definitio non sufficienter manifestaret essentiam rei. Et propter hoc dicitur in primo Physi-corum, quod definitio dividit definitum in singulare, id est exprimit distincte singula principia definiti. Hoc autem non potest fieri nisi per plures dictiones: unde una dictio non potest esse definitio, sed potest esse manifestativa eo modo, quo nomen minus notum manifestatur per magis notum. Omnis autem ratio partes habet, quia est quaedam oratio composita, et non simplex nomen" (In VII Metaph., lect. 9, n. 1160).

"...Necessarium esse omnem definitivam rationem esse ex pluribus nominibus. Ille enim qui definit, non faciet notificationem rei ponendo unum nomen tantum; quia si poneret unum tantum nomen, adhuc definitum remanebit nobis ignotum" (Ibid., lect. 15, n. 1611).

words, not the quid rei but the quid nominis. A name is a sign of an object known, but a sign is a relation and relations are defined by their correlatives. The correlative of a name is that which it signifies, and for this reason any discourse, or even a single word, that indicates what a given word signifies, that is, which attaches the sign to the thing signified, gives the quid of that name, and is a nominal definition. (1) It is clear, therefore, that the notion of nominal definition is not adequately explained if it is limited to the clarification of the meaning of a word by a better known word or through its etymology. Rather, any discourse that manifests the meaning of a word, and this includes all that do not manifest the essence of a real object, is a nominal definition. St. Thomas provides a striking example of the restricted meaning of real definition and the amplitude of nominal definition when he points out that anyone who knows a remote or proximate genus of the object signified by a name, together with certain of its accidents, knows only what the name means, and does not possess the definition of the thing. (2) A discourse, therefore, which signifies this

- (1) - "...sicut quid rei est quidditas rei, ita quid nominis est quidditas nominis; nomen autem cum essentialiter sit nota earum quae sunt obiective in anima passionum (ex I Perih. meneias) non habet aliam quidditatem nisi hanc, quod est signum alicuius rei intellectus seu cogitationis; signum autem ut sic, relativum est ad signatum; unde cognoscere quid nominis nihil est aliud quam cognoscere ad quod tale nomen habet relationem, ut signum ad signatum" (Cajetan, De Ente et Essentia, q. I, [edit. De Maria], p. 19).
 "Oportet enim scientiam hominem esse, et quaerentem quid significat. Nec hoc esset aliquo modo nisi aliquam rem conciperet, quam scit esse, quamvis nescit eius definitionem. Concipit enim hominem secundum cognitionem alicuius generis proximi vel remoti, et aliquorum accidentium quae extra apparent de ipso" (In De Trinitate, [edit. Marietti], lect. 2, q. 2, a. 3, resp.).

knowledge, in spite of its containing certain essential and accidental notes of the object signified, remains a nominal definition; it does not manifest the quid rei. Cajetan is in complete accord with this doctrine when he holds that knowledge of the meaning of the name, as distinguished against knowledge of the essence of the thing (which can be attained only through the proper principles of the object), can be acquired through accidents of the object, or even its essentials, through common principles or gestures; therefore any discourses expressing such knowledge are nominal definitions only. St. Albert opposes to real definition (definitiones propriae), which perfectly manifests the essence of the object, "aliquid aliud quod diffinitionem imitatur incomplexi aliqua declaratione," (2) and gives as the various kinds of the latter definition through material and efficient cause and definition through accidents, whether common or proper, and all other explanations through a word or expression better known than the name. (3)

From the above observations on real and nominal definition it is clear that John of St. Thomas' definition of the two per modum unius ("ratio naturam rei aut termini significationem exponeus") (4) is a bad one. The two kinds of definition differ essentially, since

- (1) - "...cognoscere quid nominis nihil est aliud quam cognoscere ad quod tale nomen habet relationem, ut signum ad signatum. Talis autem cognitio potest acquiri per accidentia illius signati, per communia, per essentialia, per nuda, et quibusvis aliis modis" (De Ente et Essentia, q. I, p. 19).
 (2) - De Praedicabiliis, Tract. I, ch. 6.
 (3) - Ibid.
 (4) - Logica, I. P. Summa I. L. III, ch. 3, p. 19.

the one manifests the quid of a real object, while the other explains only the quid of a word. ⁽¹⁾ The two, therefore, must not only be defined separately, but treated separately.

Here real definition, which is definition in the proper sense, will be treated first. In its regard it may first be pointed out that in the various sciences the possibility of real definition is greatly limited, for such definition presupposes, obviously, an object whose essence is perfectly knowable to us. In his commentary on the De Trinitate of Boethius, St. Thomas points out that because the human intellect is dependent on the phantasm, such objects are of two kinds. First, those whose essences can be known immediately are limited to those of which there are phantasms, namely, sensible things, to the exclusion of immaterial. Secondly, the essences of certain immaterial objects can be known mediately, that is, through the mediation of sensibles, in those cases where their essences are sufficiently expressed by sensible things. St. Thomas gives as an example of the latter the second intentions which form the subject of logic. ⁽²⁾ When the essence

- (1) - "...Et haec est essentialis differentia inter quid nominis et quid rei, scilicet quod quid nominis est relatio nominis ad signatum; quid vero rei relatae seu significatae essentia, et ex hac differentia sequuntur omnes aliae, quae dici solent; puta quod quid nominis sit non entium, complexorum... relatio enim vocis potest terminari ad non entia in rerum natura, et complexa..." (Cajetan, loc. cit.).
- (2) - "...Ad hoc autem quod de re aliqua sciamus quid est, oportet quod intellectus noster feratur in ipsam rei quidditatem sive essentiam vel immediate vel mediatis aliquidibus, quae sufficienter eius quidditatem demonstrant. Immediate autem ferri non potest intellectus noster secundum statum vitae in essentiam divinam et alias separatas essentias, quia immediate extenditur ad phantasmatum, ad quae comparatur sicut visus ad colorem... Et sic immediate potest con-

is not knowable to us, either immediately or mediately, then only a nominal definition of one kind or another can be given; for this reason it pertains to the logic of the first operation to provide certain rules governing nominal definition.

With regard to knowledge through real definition of essences that the human reason can know immediately, namely, the quids of sensible things (the objects of philosophy of nature and mathematics), a question immediately arises regarding logic. that is, whether the direction of logic is possible and necessary with respect to knowledge of such essences. The answer to the question would seem to be negative, for the role of logic is to direct operations of the reason so that the object may be attained without error; but here the object in question is the proper object of the human mind, and no faculty can err per se with respect to its proper object without ceasing to be a faculty. Hence it appears that in respect to knowledge of the essences of sensible things, the direction of logic is neither necessary nor possible.

A comparison with the external senses makes this problem clear.

The proper object of the sight, for instance, is color, and the eye cannot fail to see the color which is presented to it, except accidentally, that is, because of a defect in this or that particular eye. There is no

cipere intellectus quidditatem rei sensibilem, non autem alionus rei intellectus...
Sed quaedam invisibilia sunt, quorum quidditas et natura perfecte exprimitur ex quidditatibus rerum sensibilibus notis et de talibus intelligibilibus possumus scire quid est, sed mediata, sicut ex hoc quod scitur quid est homo et quid est animal, sufficienter innotescit habitudine unius ad alterum, et ex hoc scitur quid est genus et quid est species"
(In De Trinitate, lect. 2, q. 2, a. 3, resp.).

question of the operation of the eye being perfected by an art. Similarly, since the proper object of the human reason is the essence of sensible objects, it would seem to hold true that in respect to such objects there must be perfect determination, such that on the presence of the sensible image in the phantasm, the intellect is determined to a grasp of its quid. To answer this difficulty, it is necessary to consider the nature of the first operation of the reason, comparing the intelligence with the senses from the point of view of the perfection of the proportion of these faculties to their proper objects. The correct solution of the problem is of the greatest importance for the understanding of why the logic of the first act constitutes in itself a division of logic and of the nature of the direction provided to this operation by the Predicables of Porphyry and the Predicaments of Aristotle.

3. - Position of Cajetan.

Cajetan, faced with this problem, holds to the perfect determination of the intellect, such that the proportion of the sense and the intellect to their proper objects is the same. In determining the role of Aristotle's Predicaments in the direction of the first operation, he proposes that this operation can be considered in two ways: "... uno modo per se, idest in sua puritate; alio modo per accideos, idest ut admiscetur ei aliquid alterum, puta compositio vel applicatio." ⁽¹⁾ Here are opposed the first act considered in itself and the first act considered in conjunction with certain compositions which are accidental to it.

(1) - In Praedicamenta Aristotelis, Introductio, (edit. Laurent), p. 2.

Regarded according to the second consideration here proposed, that is, as it accidentally implies composition - for instance, as the whole or part of the definition is predicated of the thing defined, or as the parts of the definition are composed with one another - ⁽¹⁾ the first operation requires direction. This must assume the form of a treatise about definition which must determine "what the definition is, and of what and what kind of principles it is constituted, and its properties and subjective parts." ⁽²⁾ Such a treatise is necessary because the composition implied in definition, or in the predication of the definition, admits of the possibility of error. What is of importance is that such error is conceived by Cajetan as being accidental to the first act itself, since the composition implied in the definition is so conceived. Therefore the treatise on definition is out of place at the beginning of logic, since logic must begin with the direction of the first act itself. According to Cajetan, this treatise should immediately precede the study of dialectic, ordered to this art as it deals with problems about definition. ⁽³⁾ As a corollary to this position, it follows for Cajetan that there is no need to study the Predicables before the Predicaments because the former are ordered to the art of definition whereas the latter look to the direction of the first act "in its purity." ⁽⁴⁾

- (1) - "... tripliciter errare contingat diffiniendo, scilicet applicatione partium definitionis ad diffinitum, et in conjunctione partium definitionis inter se, et in applicatione totius definitionis ad diffinitum" (Ibid.).
- (2) - "Si autem loquamur de prima operatione intellectus per accideos, sic regula eget, et eius regula est ars diffinitiva, sicut regula discursus est ars syllogistica... Baset autem illius artis determinare quid sit diffinitio et ex quibus constet, et qualibus, et de passionibus eius, et partibus subiectivis" (Ibid.).
- (3) - "... et ante librum logicorum haec ars locum habet quum regulativa est intellectus ad notitiam incomplexi; dialectica vero regulat ad notitiam complexorum problematum" (Ibid.).
- (4) - "... Et quia... diffiniri genus, speciem, etc., diffinitivae artis opus est, ideo liber iste (Praedicamenta) naturaliter praecedat librum Porphyrii" (Ibid., p. 7).

All question of composition is for Cajetan, then, accidental to the first act considered in itself - "in its purity." Yet, Aristotle's Predicaments are ordered to the direction of the first operation so considered. Faced with the problem of determining the role of this work, Cajetan makes a distinction in the kinds of direction which may be considered in respect to the first act in itself - that between direction on the part of the operation itself, and that on the part of the object. Applying this distinction, he finds that there is no need for direction on the part of the operation :

"Si loquamur de prima operatione intellectus per se, sic ex parte sui regula non eget dante ei rectitudinem qua ad obiectum absque errore pertingat, quoniam intellectus secundum primam operationem aut totum aut nihil attingit...et consequenter cum omnis error in componendo vel dividendo vel discernendo, etc., contingat, prima operatio per se est experta erroris" (1).

Since, therefore, the first act in itself is free from error, attaining either the whole or nothing, the direction provided by the Predicaments is a direction on the part of the object only :

"Eget tamen regula ex parte objecti, dante ipsi intellectui facilitatem et promptitudinem ad attingendum suum obiectum : quod est obiectum primae operationis, confuse dispersum et obscurum in universo, ita ut si simplex puta albedo praesentia esset, quod quid eius intueri difficilimum foret, quum te, cum substantia, cum relatione mixta est. Modo autem distinctis rerum ordinibus, et adnatis cuiusque ordinis rebus, velut quibusdam figuris, facile et prompte circa quodcumque incomplexum accedemus intellectus aciem figere" (2).

The need for a rule, therefore, for the first operation "in sua puritate" is founded not on the possibility of error, but only on "ease and

(1) - Ibid., p. 2.
(2) - Ibid.

promptitude." Its work is merely the dissipation of the confusion on the side of the objects so that the intellect can get at each essence. If whiteness alone is presented to the intellect, there is perfect determination with regard to its quid.

Cajetan's distinction between the rule on the part of the act and that on the part of the object is itself impossible, since all direction of the acts of the mind by logic consists in ordering objects. But the more fundamental point in his doctrine is his view of the intellect in its first act as being so proportioned to its object that it needs no other direction than the isolation of that object. In other words, for Cajetan the intellect is as determined with respect to the quid as are the senses with respect to the proper sensibles. This opinion, and the view of composition as accidental to the first act in sua puritate, and the conclusion following from these touching the role of the Predicables and Predicaments must be examined in the light of certain considerations from St. Thomas.

b. - Doctrine of St. Thomas.

First, for St. Thomas, exclusion of all deception with respect to the proper object belongs to the very definition of cognitive faculty as such :

"...ad proprium obiectum unaqueque potentia ordinatur secundum quod ipsa; quae autem sunt huiusmodi, semper eodem modo se habent. Unde, manente potentia, non deficit eius iudicium circa proprium obiectum. Obiectum autem proprium intellectus est quidditas rei" (1).

(1) - Ia P., q. 85, a. 5, c.

The external senses, for example, are infallible with respect to their proper sensibles, except for that deception which may result from a particular defective organ, and the same principle applies to the intellect with respect to the essences of sensible objects :

"...unde, sicut visus nunquam decipitur in proprio objecto, ita neque intellectus in cognoscendo quod quid est. Nam intellectus nunquam decipitur in cognoscendo quod quid est homo" (1).

And the reason for this : "...quia quod quid est est proprium objectum intellectus" (2).

Yet, in spite of this insistence on the per se infallibility of all faculties, including the intellect, with respect to their proper objects, St. Thomas nevertheless admits the possibility of deception with respect to the essences of sensible things. For instance :

"...Unde circa quidditatem rei, per se loquendo, intellectus non fallitur; sed circa ea quae circumstant rei essentiam vel aliquid, vel componendo, vel dividendo, vel etiam ratiocinando... 'quod quid est' in rebus compositis; non ex parte organi, quia intellectus non est virtus utens organo; sed ex parte compositionis intervenientis circa definitionem, dum vel de finitio unius rei est falsa de alia, sicut definitio circuli de triangulo; vel dum aliqua definitio est in se falsa impli- cans compositionem impossibilem" (3).

The falsehood may appear when the definition is expressed in the second act of the mind - for instance, according to St. Thomas's example, if the definition is predicated of something whose definition it is not. -

Since every definition is virtually an enumeration, any definition which

- (1) - In III De Anima, lect. 11, [edit. Marietti], n. 763.
- (2) - Ibid.
- (3) - Ia P., q. 85, a. 6, c.

misrepresents the essence of the thing defined will thus become a source of falsity - for example a definition of knowledge as a kind of actio, or of a triangle as a kind of quality. The other possibility mentioned by St. Thomas is that where the falsehood is manifest within the definition itself, in the case where the notes composed are mutually repugnant.

The point of importance is that no matter how the error manifests itself, in either case it implies an intellect which is simply deceived as to the essence of one or the other of its proper objects : "contingit intellectum decipi circa quod quid est."

Yet St. Thomas adheres to the principle of the per se infallibility of all faculties with respect to their proper objects by pointing out that the error, when it occurs, occurs per accidens. If here the meaning of per accidens is not quite so evident as it is in the case of the accidental error in the external senses, where it indicates a defect in a particular organ, there is nevertheless an analogy between the two cases.

When it is said that the intellect cannot err per se, that means it cannot err as intellect. Per accidens therefore refers to something that does not pertain to the nature of intellect as such, and St. Thomas indicates that this is the "composition which intervenes regarding the definition." It is the import of these words that must be probed more deeply to arrive at an understanding of the proportion existing between the intellect and its proper object, in which proportion lies the root of the possibility of error.

The definition here in question is the definition of sensible objects. It was pointed out at the beginning of this chapter that every

real definition, that is, which manifests the essence through its principles, must be a discourse, and the definition of the discourse there given, taken from St. Thomas' definition of discourse given in the Metaphysics, is a composition of words ordered by the reason. Words are signs of concepts, and an ordering of words is the sign of an ordering of the similitudes. The mind, therefore, in defining, must order its representations to one another; because of its imperfection it cannot, as does the angelic intellect, adequately represent its object by one simple act, and therefore it cannot adequately manifest it by a single word. When St. Thomas says that this composition of words required in definition is a work of the reason, reason must be taken as opposed to intellect, so that attainment of knowledge of the essence involves a composition whose principle is reason and which, accordingly, is not determined to one.

That reason must here be taken in this sense is made perfectly clear by St. Thomas when, treating of the potential character of the verbum which proceeds from the human mind, he teaches :

"...nam cum volo concipere rationem lapidis, oportet quod ad ipsam ratiocinando perveniam...
Quando ergo sic ratiocinando, intellectus iactatur hac atque illac, nec dum formatio perfecta est, nisi quando ipsam rationem rei perfecte conceperit..." (1).

Here he explicitly makes use of the word reasoning to denominate the operation by which the mind arrives at its proper object, and the explanation of this denomination is found in what follows : the mind is in potency to knowledge of the quid in such a way that the conception of the form involves a passage from the known to the unknown in which "the in-

(1) - Super Evangelium S. Iohannis Lectura, ch. I, Lect. I, n. 26.

tellekt is moved this way and that." Such a passage from potency to act through a movement implying interdetermination is an operation of reason as such, and not of intellect as such.

The same doctrine is contained in another passage in which, contrasting the human mode of knowing with the angelic, he explicitly speaks of the act of apprehension as an act of reason :

"Aliquando vero ad intima non pervenitur nisi per circumposita quasi per quaedam ostia, et hic est modus apprehendendi in hominibus, qui ex effectibus et proprietatibus procedunt ad cognitionem essentialae rei. Et quia in hoc oportet esse quendam discursum, ideo hominis apprehensio ratio dicitur, quamvis ad intellectum terminetur in hoc quod inquisitio ad essentiam rei perducit" (1).

Knowledge of the essence involves a kind of discourse beginning from properties and effects known to the senses, and terminating in the apprehension of the essence; the simple apprehension, therefore, is a movement from the known to the unknown and merits the name reason.

From the consideration of these texts emerges the meaning of the expression per accidens when it is said that the intellect can be deceived accidentally with respect to its proper object. As intellect it cannot be deceived, but even in its first operation the human mind is a reason and as such it is mobile, indetermined, and subject to error, and in need, consequently, of the direction of logic.

From the consideration that, with respect to knowledge of the essence, the intellect as such cannot err, yet as reason it can err, the question arises : to what kind of knowledge of its proper object is the intellect determined by nature, and for what kind of knowledge is the

(1) - In III Sent., dist. 35, q. 2, a. 2, sol. 1.

operation of the reason as such requisite, admitting, as it does, the possibility of error ?

The response to this question emerges from the consideration of certain texts of St. Thomas. First, in his commentary on the De Trinitate of Boethius, he points out that two kinds of knowledge of the essence can be distinguished - perfect knowledge and confused knowledge - and states that confused knowledge of the object must necessarily precede perfect :

"Est tamen sciendum, quod de nulla re potest sciri an est, nisi quocumque modo sciatur de ea quid est, vel cognitione perfectae, vel saltem cognitione confusa, prout dicit Philosophus ... quod definita sunt praecognita partibus definitionis. Oportet enim scientem hominem esse, et quaeentem, quid est homo, per definitionem, scire quod hoc nomen homo significat" (1).

The quest to know what something is by definition necessarily presupposes some knowledge of what the thing is - at least enough to enable us to attach the name to the thing; unless we have some knowledge of what the name means, we cannot ask the questions : is it ? and, what is it ?

This knowledge of the quid that precedes the asking of these questions is the confused knowledge mentioned by St. Thomas in the text; that attained by the definition is the perfect knowledge.

That the object to be defined is known by a confused knowledge prior to its definition is taught also in the Summa Theologica. St. Thomas, answering the objection that the particular is known to us prior to the universal, because the thing defined is less universal than the parts of the definition, but known prior to them, points out that a part can be

(1) - In De Trinitate, lect. 2, q. 2, a. 3.

considered in two ways : first, absolutely, or in itself, and in this way there is no reason why the part cannot be known prior to the whole; secondly, as part of some particular whole, and in this way it is necessarily known posteriorly to the whole. He exemplifies this by pointing out that a house is known as a certain confused whole before all its parts are distinguished. He then applies this common doctrine to the case of definition, pointing out that the principles that define the object, considered absolutely, must be known prior to the object defined, otherwise they could not be principles of knowledge of it. But what is most important for the present problem is what follows : St. Thomas concedes that the object defined is known prior to the parts of its definition, stating that the former is known confusedly before a distinct knowledge of it is attained by definition : "... prius enim cognoscimus hominem quam confusa cognitione, quam sciamus distinguere omnia quae sunt de hominis ratione." (1)

Similarly, in his commentary on Aristotle's Physics, he remarks that the object defined stands to the principles that define it as an integral whole to the parts that are actually in it. Although it is the object defined that is signified by the name, it does not follow

(1) - "Pars aliqua dupliciter potest cognosci : - uno modo absolute, secundum quod in se est; et sic nihil prohibet prius cognoscere partes quam totum, ut lapides quam domum. - Alio modo, secundum quod sunt partes huius totius, et sic necesse est quod prius cognoscamus totum quam partes. Prius enim cognoscimus domum quam confusa cognitione, quam distinguamus singulas partes ipsius. Sic igitur dicendum est quod definitum, aliquo non late considerata sunt prius nota quam definitum, alioquin non notificaretur definitum per ea; sed secundum quod sunt partes definitionis, sic sunt posteriora nota. Prius enim cognoscimus hominem quam confusa cognitione, quam sciamus distinguere omnia quae sunt de hominis ratione." (Ia P., q. 85, a. 3, ad 3).

that anyone who apprehends the meaning of the name, and uses that name, apprehends the principles that define the object; for the use of the name, he need know the object only as a confused whole. Then when he acquires the definition he knows the whole distinctly by being in possession of its parts. (1)

Since the attainment of a distinct knowledge of the essence requires an advance from the known to the unknown by the operation of the reason, it is only to a confused knowledge of its proper object that nature determines the intellect so that no error is possible.

By way of description of this confused knowledge, it may be said that by it man knows that the object is something of a determined nature, differing from other objects, although this nature is as yet unknown. It necessarily includes the note of being. It is a knowledge that enables man at least to designate the object signified by the name; an attempt to formulate it into a definition will usually involve some sensible accidents of the object.

With respect to this confused knowledge, it must be noted that what is naturally known is the first principle of all acquisition

- (1) - "Ponit aliud signum de toto integrale et intelligibili. Definitum enim se habet ad definita quodammodo ut totum integrale, inquantum actu sunt definita in definito; sed tamen qui apprehendit nomen, ut puta hominem aut circulum, non statim distinguit definita; unde nomen est sicut quoddam totum et indistinctum, sed definitio dividit in singula, idest distincte ponit principia definiti" (In I. Physicorum, lect. 1, n. 26).

(1) hence the confused knowledge provides the first of new knowledge; principles from which must begin the advance of the reason to the acquisition of distinct knowledge through definition. These first principles are the notions of being, one, good, and the like, which are the first concepts of the intellect and serve as certain rationes seminales from which all other knowledge follows : (2)

"...similiter in intellectu insunt nobis etiam naturaliter quaedam conceptiones omnibus notae, ut entis, unius, boni, et huiusmodi, a quibus eodem modo procedit intellectus ad cognoscendam quidditatem uniuscuiusque rei, per quam procedit a principiis per se notis ad cognoscendas conclusiones" (3).

Since the more common is always the principle of knowledge of the less common, the natural order of procedure of the reason is to begin from the most common, naturally known, notion of being, and to proceed through the less common to the particular.

From these considerations the error of Cajetan becomes apparent. Unlike the external senses, the intellect is by no means perfectly proportioned to its proper object, but for a distinct knowledge

- (1) - "Fatum igitur regulas et principia dare est logici ad incomplexi cognitionem, per quae a principis per se cognitio incipiat et deveniat in cognitionem eorum quae quaeruntur : non enim omnia possunt esse incognita : quia sic quaerendo procederetur in infinitum. Principia enim prima sunt quasi semina per naturam cognitioni hominis inserta, ex quibus quae cognoscuntur magni oriuntur fructus scientiarum de his tract. I, ch. 6).
- (2) - "Similiter etiam dicendum est de scientiae acquisitione, quod praestant in nobis quaedam scientiarum semina, scilicet primae conceptiones intellectus, quae statim lumine intellectus agentis cognoscuntur per species a sensibilibus abstractas, sive sint complexa, ut dignitates, sive incomplexa, sicut ratio entis, et unius et huiusmodi, quae statim intellectus apprehendit. Ex istis autem principis universalibus omnia principia sequuntur, sicut ex quibusdam rationibus seminalibus" (Q. D. De Veritate, q. 11, a. 1, c.).
- (3) - Quaestiones Quodlibetales, q. 8, a. 4.
- (4) - Cf. Ia P., q. 85, a. 3, c.

thereof it must advance by its own activity from knowledge provided by nature :

"Visus enim corporalis non est vis collativa, ut ex quibusdam suorum obsectorum in alia proveniat; sed omnia sua objecta sunt ei visibilia, quam cito ad illa convertatur... Sed potentia intellectiva, cum sit collativa, ex quibusdam in alia deveniat, unde non se habeat aequaliter ad omnia intelligibilia consideranda, sed statim quaedam videt, ut quae sunt per se nota, in quibus implicite continentur alia quae intelligere non potest nisi per officium rationis ea quae in principia continentur explicanda" (1).

It is this need of an advance from the naturally known to the unknown "per officium rationis" within the apprehension itself that Cajetan failed to see. Once it is seen, it is evident that composition is essential and not accidental to the first operation in sua puritate, and that, consequently, although the possibility of error is per accidens with respect to the intellect as such, it is per se with respect to the reason which must intervene for acquisition of distinct knowledge. There is, therefore, need of a rule to guide the first operation itself; for as soon as the mind leaves the plane of natural determination and proceeds by its own activity to knowledge of the unknown, it has per se need of direction. The provision of this direction is the work of the Predicables and Predicaments, the science of division, and the science of definition.

(1) - Q. D. De Veritate, q. 11, a. 1, ad 12.

5. - The Predicables, Predicaments and Science of Division.

Every definition is formed by a certain composition of concepts. The reason, however, cannot compose its concepts so as to know the essence unless it previously knows the concepts that are constitutive of that essence. Because of this, the first work of logic must be the manifestation of the principles that define things.

St. Albert provides a brief summary of the steps by which logic effects the manifestation of these principles :

"... ad definitionem habendam necessarium fuit praemittere diffinibilium et diffinitionum inventionem et acceptationem : ad quod necessarium fuit ponere ea secundum quorum rationem praedicabilia reducuntur ad ordinem, et secundo fuit necessarium ponere qualiter ipsa praedicabilia ordinata sunt, et tertio qualiter ex divisione colligitur cujuslibet incompleti diffinitio" (1).

The manifestation of the praecognita of definitions is effected in three steps. First, because in order to define, the concepts must be disposed according to a certain determined order or relation to one another, the intentions according to which the concepts (here called praedicabilia for a reason that will be explained below) must be ordered, must be determined. Secondly, the principles themselves must be ordered according to these intentions. The first of these steps is the subject of Porphyry's Predicables, the second that of Aristotle's Predicaments. Thirdly, from the knowledge provided by these two works, the reason must proceed by the method of division to the discovery of the proper principles of particular objects; this procedure is directed by the science of

(1) - In I Periherm., Tract. I, ch. 1.

(1)
division.

The first work of logic is the determination of the intentions according to which the concepts must be ordered to manifest the essences of things. In view to the discovery of these intentions it may first be remarked that the reason knows by predication, that is, by saying one of another, or denying one of another. Although in the definition itself there is no predication, yet the definition can be said of the object defined, and, moreover, the elements that compose the definition are forms that can be said of that object. For this reason, predicability, or the relation attached to the simple concepts which permits their predication, is presupposed to all composition of the reason and must be the first subject of consideration of the logician. A form, however, is predicable of others only because it is in them, or because it is communicable to them, that is; because it is a universal. (2) Hence the forms that define and which must be ordered by logic, are universals. The intentions governing the disposition of the universals, or predicables, must necessarily be their ratio universalitatis or ratio

- (1) - "...ratio qua fit ordinatio primum in Porphyrio tradita est. Ordinatio autem prout est in ordinatis, traditur in scientia libri Predicamentorum, et in scientia sex principiorum, et in scientia divisionum" (St. Albert, De Sex Principiis, Tract. I, ch. 1).
- (2) - "...si ratio praedicabilis de aliis secundum veritatem attendatur, proprie et vere praedicari de alio non potest, nisi quod inest illi de quo praedicatur... Et per hoc quod inest sequitur de necessitate quod communicabile sit omnibus quibus inesse significatur. Communicabile ergo multis est secundum aptitudinem et in multis et de multis. Omne autem quod sic inest, et hac ipsa de causa praedicabilis est. Ratio ergo et causa praedicabilis est, quod sit universale" (St. Albert, De Praedicabilibus, Tract. II, ch. 1).

predicabilitatis, that is, their mode of being in and of being said of their inferiors. (1) There are five modes of universality. Of these, three - genus, species and difference - are modes of being in and of being said of essentially; two - property and accident - are modes of being in and being said of accidentally. (2) These five modes are the intentions according to which the universals are ordered.

The order according to which the universals are disposed is contained in notions of the predicables themselves. For genus, by definition, is "that under which the species is placed by direct and immediate supposition," (3) and species, in turn, is that which is placed under a determined genus. (4) The diverse species must be ordered under the genus, from which they are drawn by opposite essential differences, which are added "from the side for the determination and contraction of the genus." (5)

The notions of genus and species are fulfilled most properly in only one genus, the supreme genus, which, because it has no genus

- (1) - "...Cum ergo primus actus rationis (qui scientiam ignoti investigat per notum) sit ordinatio praedicabilium, ordinatio autem praedicabilium cognosci non potest, nisi scientia per quam rationem praedicabile sit id quod praedicatur; quae ratio sumitur ex hoc, quod praedicabile est..." (Ibid.).
- (2) - For the sufficiency of the five predicables, see *ibid.*
- (3) - "...genus est cui supponitur species directa et immediata suppositione" (St. Albert, De Praedicabilibus, Tract. III, ch. 2).
- (4) - "...Secundum autem intentionem quae est apud Philosophos dicimus speciem deservientes, quae est postea positione ordinis naturae et participationis sub assignato genere" (Ibid., Tract. IV, ch. 1).
- (5) - "...differentia...adungitur lateraliter ad generis determinationem et contractionem" (Ibid., ch. 2).

(1) superior to it, is only genus, and one species, the ultimate species, which is only species (2) and in no way a genus, being said of a multitude which differ only numerically. (3) The disposition of the universals begins with one supreme genus and ends with a plurality of ultimate species. The descent from the supreme to the ultimate extremes by way of division through opposite differences gives rise to and passes through certain intermediate, or subalternate genera, which are species with respect to the genera above them and genera with respect to the species below them. Such a descent, therefore, gives rise to the disposition of predicables of which the Porphyrian tree in the genus of substance is the familiar example.

The disposition of the universals according to this order conduces to definition because the definition of the species is attained by the division of the genus proximate to it by the differences. (4) The proper specific difference composed with the proximate genus results in the definition of the species; only by universals said according to these intentions can perfect definition be achieved. The notions of property and accident must be known because there are universals said

- (1) - Cf. Ibid., ch. 3.
- (2) - Cf. Ibid.
- (3) - Ibid.
- (4) - Ibid. his igitur ostenditur, quod in proemio istius libri utitur est, quod scilicet cognitio universalium valet et dum differentias quae faciunt aliud, divisiones faciunt generum in species; et secundum easdem et per easdem definitiones specierum assignantur, eo quod definitiones verae sunt ex genere et talibus differentiis" (Ibid., Tract. V, ch. 1).

according to these intentions and care must be taken that no genus be divided according to anything so said. (1)

It is clear that knowledge of the intentions themselves according to which the universals must be disposed in no way provides adequate direction to the reason seeking knowledge of the quid. This is no more than a first step, the essential work of logic is the disposition of the universals themselves according to these intentions:

"Sequitur nunc determinare de his quae secundum rationem praemissam ad se invicem ordinanda secundum genera, species, differentias, propria, et accidentia: hoc enim solum est in quo perficitur rationis ordinatio" (2).

This disposition is the work of Aristotle's Predicaments. Since it cannot be effected unless the intentions governing it are first known, the consideration of the Predicables must precede that of the Predicaments; Cajetan, therefore, is in error in maintaining that logic begins with the Predicaments, and that the place of the Predicables is immediately prior to the Topics.

It is, of course, impossible that any work of logic order all the universals from supreme genus to species specialissimae within each of the categories. Such a complete disposition can be effected only through the progress of the various sciences. The work of the Predicaments is to manifest the universals only to the extent that

- (1) - "Ist autem (liber Praedicabilium) necessarium et utile ad definitionum assignationem: quae omnes prout praedicabiles sunt, ex genere et differentiis constituentur, in quibus cavere oportet ne aliquod accidentale ponatur. Non enim potest vitari malum nisi cognitum" (Ibid., Tract. II, ch. 1).
- (2) - St. Albert, De Praedicamentis, Tract. I, ch. 1.

knowledge of them is necessary for the various sciences, but cannot be acquired through their own proper light.

For the manifestation of the work of the Predicaments, it must first be recalled that in the confused knowledge of the object to which nature determines the mind, the object is grasped in the immediate, common and analogous notion of being. From this the reason must advance to knowledge of the defining principles through division of the supreme genus of the object as indicated above. But knowledge of the supreme genera, which constitute the primary division of the confused notion of being, is not given by nature; it must be acquired. This knowledge is provided by the Predicaments, which determine the primary division of being into the supreme genera of substance and the nine accidents. (1)

In addition to determining the primary division, Aristotle proceeds to certain further divisions within certain of the supreme genera. Substance, for instance, is divided into first and second, knowledge of which division is essential because, although it is first substance that is "properly and principally and especially substance," it is only second substance that can be a genus. Discrete and continuous quantity are divided into number and speech; line, surface and body. Quality is divided immediately into four species: habit and disposition; natural potency or impotency; passion or passive quality; form or constant

- (1) - On the adequacy of this division, see St. Albert, Ibid., ch. 7.
 (2) - "...substantia quae propria et principaliter et maxime et tertio modo substantia dicitur, est quae nec de aliquo sibi directo subiecto in quo sit, per naturam et intellectum praedicatur, nec est in subiecto aliquo" (Ibid., Tract. II, ch. 2).

figure. Provision of knowledge of these divisions is a necessary work of logic, because they cannot be known by the light of the various inferior sciences themselves, yet are essential for resolution of the definition into the naturally known; without knowledge of these primary divisions, in other words, knowledge of the quid of the subject is impossible prior to the study of metaphysics.

The geometrician, for instance, by the light of his own science, may discover the genus of triangle as figure and so proceed to the definition of triangle from its proper principles, thus distinguishing it from the circle and the rectangle and putting himself in possession of the principle of knowledge of its properties. But the subjects studied in the science are continuous quantities, which are simply accepted. Hence, in the measure that the light of the science cannot tell him what figure and continuous quantity are, he cannot know what his subject, the triangle is. Accordingly, to know the quid of the triangle, or to resolve his definition in the naturally known, he must depend upon logic to provide knowledge of those genera superior to figure. Similarly, the moralist can define virtue as a habit, but he needs the light of logic to define habit as a quality. St. Thomas gives an excellent example of defining according to the predicamental order in arriving at the definition of grace: after determining that grace places something in the soul, he then asks whether grace is a quality and then whether it is a habit. (1) Similarly, in determining the species of motion, Aristotle and St. Thomas proceed by the light of logic in examining each of the categories in turn to discover in which motion is

(1) - Cf. IaIIae, q. 110, aa. 1-3.

(1) Within the category of substance, no division into subalternate genera, such as those given in quality, quantity, and ad aliquid is necessary, since by the light of his own science the philosopher of nature can divide corporeal substance into living and non-living. Accordingly, the divisions supplied by Aristotle are complete and adequate so far as the proper work of logic is concerned.

In addition to establishing the ten supreme genera as substance and the nine accidents, and providing the necessary divisions, Aristotle notifies the principal ones - substance, quantity, relation, quality, action and passion - by certain of their properties. These serve as a guide to the definer in the initial step of placing his subject in the proper category.

As remarked by St. Albert in the text cited above from his commentary on the Perihemenelas, for the formation of definitions the knowledge provided by the Predicables and Predicaments must be complemented by the science of division.

Two kinds of division would seem to be prerequisite to the formation of definitions. (1) First of these is division of an integral whole into its component parts. As ordered to the knowledge of the essences of things, this kind of division makes known the proper material principles of the object to be defined. Thus, for instance, in the

(1) - Cf. In V Physicorum.

Perihemenelas the resolution of the enunciation into the noun and the verb precedes the definition of the enunciation, and is a principle of knowledge of the definition since it is the verb, as the sign of composition, that makes the enunciation a discourse in which there is the true or the false. This mode of procedure - division into material parts prior to definition - is followed by Aristotle also in the Prior Analytics with respect to the syllogism, in the Posterior Analytics with respect to demonstration, and in the Physics with respect to mobile being.

(2) The second kind is immediately ordered to definition, since it terminates in the manifestation of the formal principles of the object itself to be defined; in this way it directly and immediately provides the praecognita by the composition of which the definition is effected. This is division of a genus into its species. Universals are confused wholes which are known distinctly by their division into their subjective parts. Thus, the supreme genera are known when they have been divided by their differences to the species specialissimae, as has been mentioned above. The defining principles of these species are determined by the division of the proximate genus by specific differences.

There is a third kind of division which also seems to be ordered to the knowledge of essences of things, but in a more remote way than the two kinds just mentioned. This is a division of a word into its meanings. This kind of division can serve as a principle of knowledge of things in so far as a better known meaning of a word can serve as a principle of knowledge of an unknown meaning, which is the definition of the object to be defined. This, in turn, is possible in

the measure that the same name is imposed on different objects according as they are known in a certain relation to one another. Thus, for instance, St. Albert divides the latin word genus into certain of its meanings of which the first (in English, kin) is a principle of knowledge of the last, which is the second intention signified by the word genus.

Besides these three kinds of division, St. Albert mentions three others - division of a subject into accidents, of an accident into subjects, and of an accident into accidents. (1) All have in common that they are modes of passing from the known to the unknown in so far as they provide a distinct knowledge of what was previously known as a confused whole by distributing that whole into its parts. The ensemble of the six kinds would seem to constitute the subject of the science of division, which should provide rules governing the procedure in each. Such rules are provided by Boethius in his liber De Divisione. (2)

It must be noted that while the notion of universal and the disposition of the universals in their categories by the Predicables, Predicaments and science of division has been considered thus far as they are ordered to definition, that is, to knowledge of the ignotum incomplexum, they are also presupposed to the attainment of knowledge of the ignotum complexum by demonstration. This will be explained in Chapter Five.

In addition to the disposition of the universals according to the predicamental order, the sciences of division, the art of

(1) - De Praedicabilibus, Tract. II, ch. 1.
(2) - Boethius, liber De Divisione, in Patrologiae Cursus Completus, Series Prima (ed. Migne), Paris, 1847, Tome 64, cols. 877B-887C.

(1) definition must provide rules governing real definition, definition of substance and of accidents, and nominal definitions. But what has been mentioned suffices to indicate that there is an advance from the known to the unknown within the first operation, and that this advance makes use of an instrument proper to itself governed by certain second intentions proper to itself. The direction provided by logic to the reason knowing the quid is in no way reducible to that provided to the reason knowing the true, and therefore constitutes a separate division of logic.

From the considerations made in this chapter, it is clear that the term 'simple apprehension' applied to the first operation can be misleading. The apprehension of the quid is a simple operation in the sense that by it the mind knows but one object; in the first act there is no composition of diverse objects through predication as there is in the second; there is no truth or falsity in the proper sense in the first operation. But the simplicity of the apprehension in no way excludes an advance from the naturally known to distinct knowledge nor the particular kind of composition that this advance requires.

6. - The Term as Subject of this Part of Logic.

In brief, the term, as John of St. Thomas defines it, cannot be the subject of the part of logic that considers the simple apprehension because this operation terminates in either a confused or distinct knowledge of the object; such knowledge is signified either by the name of

(1) - For such rules, see St. Albert, De Praedicabilibus, Tract. I, ch. 6.

the thing, or by a definition, either real or nominal; hence the subject here is definition. When John of St. Thomas names the term as the subject of the logic of the first operation by his formula "primum apprehendo terminos," he is determining the subject according to something accidental to the first operation as such, that is, that the sign of what is known by it be a part of a further composition of the reason.

In arriving at his definition of the term, John of St. Thomas points out that logic, as a science, proceeds resolutively. It is necessary that there be some simple element in which the resolution effected by the science of logic terminates. Since, then, that which is last in the order of resolution is first in the order of composition, then this same last element in which all logical composites are resolved, will be the same from which all are composed. The composites mentioned by John of St. Thomas as being resolved by logic are the enunciation (resolved into noun and verb) and the proposition (resolved into subject and predicate). The term, therefore, is a common element susceptible of contraction to the noun and verb, and the subject and predicate, and is accordingly defined as "*id ex quo simplex conficitur propositio*." Because the term is first in the order of composition, it is the first subject of the consideration of logic.

Here John of St. Thomas' error is apparent. It is true, of course, that logic is a speculative science and resolves its subjects into their integral parts. It pertains, however, to the logic of the second operation to resolve the enunciation into the noun and the verb and to the consideration of the syllogism to resolve the proposition into subject and predicate. Hence, John of St. Thomas, in speaking of

the terms of these resolutions, is already considering the subjects of the logic of the second and third operations. The logic of the first operation resolves the definition into its integral parts in so far as it teaches that the definition must be composed of proximate genus and specific difference.

Lastly, there is no such second intention as the term as John of St. Thomas conceives it. The resolution of the enunciation ends with the noun and the verb because it is these kinds of words that must be composed by the reason to signify the true; the proposition is resolved into subject and predicate because it is predication that effects the syllogistic consequence. But the resolution of these works of the reason terminates with these intentions; there is no second intention into which noun and verb, subject and predicate can be resolved and which is susceptible of contraction to all of them.

With respect to his consideration of the Predicables and Predicaments, John of St. Thomas is right in assigning these to the logic of the first operation and to the resolution ex parte materiae. But they are badly placed in his logic. His initial division of logic into formal and material forces him to consider the universal and the disposition of the universals, which should be the first considerations of logic, only after the enunciation and the syllogism. This order, as will be pointed out in Chapter Five, entails certain disastrous consequences with respect to the understanding of the syllogistic form itself.

Since the power of a definition to manifest the essence of an object is entirely dependent upon what is contained in it and in no way hinges on the form (nothing can be said of this other than that it must be some composition of words), the logic of the first operation is rightly called material logic; the relations of reason with which the art of definition is concerned - genus, species, difference, and so on - are all founded on what is represented by the similitudes and have nothing to do with its form.

The logic of the first operation embraces all the direction necessary for the reason in its attainment of knowledge of the first kind of unknown, the ignotum incomplexum. The remaining parts of logic provide the direction requisite for the attainment of the knowledge of the truth or falsity of the composition or division of the mind. It remains to determine the subjects of these two parts.

CHAPTER IV.

THE SECOND OPERATION OF THE REASON.

1. - Subject of This Part of Logic.

The second operation of the reason which, like the first, pertains to it as it is a certain intellect, is to compose and divide. In its composition the intellect so unites its concepts with one another that it apprehends what is represented by those concepts as being one in the other, or as identical one with the other. Thus in the composition signified by homo est animal, animal is apprehended as being in man, or man is apprehended as identical with habens animalitatem. In its division it orders its concepts to one another so that it apprehends objects as diverse, as stone and living, in lapis non est vivens.⁽¹⁾

The ^{species} so apprehended by the second operation of the intellect is itself either conformed with reality or not, that is, either true or false. The intellect, however, by the fact that it apprehends one as in the other or as separated from it, is not yet true or false, but still indifferent to either. But it has the power to know its own

(1) - "...si consideremus ea quae sunt circa intellectum secundum se, semper est compositio ubi est veritas et falsitas; quae nunquam inveniuntur in intellectu, nisi per hoc quod intellectus comparat unum simplicem conceptum alteri. Sed si referatur ad rem, quandoque dicitur compositio, quandoque dicitur divisio. Compositio quidem, quando intellectus comparat unum conceptum alteri, quasi apprehendens coniunctionem aut identitatem rerum, quarum sunt conceptiones; divisio autem quando sic comparat unum conceptum alteri, ut apprehendat res esse diversas" (In I Periherm., lect. 3, n. 26). Cf. Ia P., q. 85, a. 5, ad 3.

(1) For this it must compare the species with some principle of knowledge, such as sense data, or a middle term. (2) Consequent upon this the intellect applies its concept to reality, assenting to what is represented as being so in reality, affirming that it is so in reality as represented by its concept, so that the composition or division becomes a judgment of reality. Then, depending upon whether the species is conformed with reality or not, the intellect is formally either true or false. (3)

Because man is a social and political animal, he has need to make known to others the concepts of his reason. This he does by means of words, which are sounds of voice which signify the concepts

- (1) - "Est autem considerandum quod quantum sensus proprii obiecti sit verus, non tamen cognoscit hoc esse verum. Non enim potest cognoscere habitudinem conformitatis suae ad rem, sed solam rem apprehendit; intellectus autem potest solus intellectus potest cognoscere veritatem" (Ibid., n. 31).
- (2) - "...iudicium non dependet tantum a receptione speciei, sed ex hoc quod ea de quibus iudicatur, examinantur ad aliqua principia cognitionis, sicut de conclusionibus iudicamus eas in principia resolvendo" (Q. D. de Veritate, q. 12, a. 3, ad 2).
- (3) - "Cognoscere autem praedictam conformitatis habitudinem nihil est aliud quam iudicare ita esse in re vel non esse; quod est componere et dividere; et ideo intellectus non cognoscit veritatem, nisi componendo vel dividendo per suum iudicium. Quod quidem iudicium, si consonet rebus, est verum, puta cum intellectus iudicat rem esse quod est, vel non esse quod non est. Falsum autem quando dissonat a re, puta cum iudicat non esse quod est, vel esse quod non est. Unde patet quod veritas et falsitas sicut in cognoscente et dicente non est nisi circa compositionem et divisionem" (In I Perihem., lect. 3, n. 31).

(1) Words, since they presuppose concepts, are compared conventionally. (2) To them as second to first, as signs to the objects signified, and, as effects to exemplary cause. Since the sign must be conformed to the thing signified, and the effect to the cause, then, because there are certain concepts of the intellect in which the true and the false are not found, namely simple apprehensions, and others in which the true and the false are found, that is, compositions and divisions, there are some words which signify without the true or the false and others which signify with the true and the false. (3) The subject of this part is that

- (1) - "Et si quidem homo esset naturaliter animal solitarium, sufficerent sibi animae passiones, quibus ipsis rebus conformaretur, ut earum notitiam in se haberet; sed quia homo est animal naturaliter politicum et sociale, necesse fuit quod conceptiones unius hominis immoerescunt aliis, quod fit per vocem; et ideo necesse fuit esse voces significativas, ad hoc quod homines ad invicem conviderent" (Ibid., lect. 1, n. 12). On the conventional signification of words, see Ibid., nn. 18-19.
- (2) - "...quorum primum, idest quarum passionum primarum, haec, scilicet voces, sunt notae, idest signa; comparantur enim passiones animae ad voces, sicut primum ad secundum, voces enim non profertur, nisi ad exprimendum animae passiones..." (Ibid., n. 19).
- (3) - "Igitur vero conceptiones intellectus praemonitae sunt ordine naturae vocibus, quae ad eas exprimendas profertur, ideo ex similitudine differentiae, quae est circa intellectum, assignat differentiam, quae est circa significationes vocum; ut scilicet haec manifestatio non solum sit ex simili, sed etiam ex causa quam imitatur effectus. Est ergo considerandum quod, sicut in principio dictum est, duplex est operatio intellectus, ut traditur in III De Anima: in quarum una non invenitur verum et falsum; in altera autem invenitur. Et hoc est quod dicit quod in anima aliquoties est intellectus sine vero et falso, aliquoties autem ex necessitate habet alterum horum. Et quia voces significativae formantur ad exprimendas conceptiones intellectus, ideo ad hoc quod signum conformetur signato, necesse est quod etiam vocum significativorum similiter quaedam significant sine vero et falso, quaedam autem cum vero et falso" (Ibid., lect. 3, nn. 23-24).

significant sound of voice which is the sign of an intellect that composes or divides and which, consequently, signifies with the true or the false; this is the enuntiation. ⁽¹⁾ The enuntiation can be the sign of a composition or division that is merely apprehensive, or of a composition or division that contains a judgment that it is so in reality; its material principles, definition, and properties are the same in both cases.

- (1) - "...De his vero quae peribant ad secundam operationem, scilicet de enuntiatione affirmativa et negativa, determinat Philosophus in libro Perihermeneas" (Ibid., lect. 1, n. 2). For St. Thomas the word interpretation, from which the title Perihermeneas is taken, signifies the same as enuntiation (cf. Ibid.). For St. Albert, however, interpretation is broader than enuntiation, signifying any word or composition of words that explains reality (In I Periherm., Tract. I, ch. 1).
- (2) - "...enuntiatio apprehensiva representat quidem verum vel falsum, et significat illud, hoc est, rem illam sic compositam per praedicatum et subiectum, super quam potest capere iudicium. Representatur etiam potest ipsum iudicium in quo formaliter consumatur veritas, quatenus intellectus applicat et comparat rem compositam ad id quod est in re. Quia enim exercetur ista comparatio et mensuratio per verbum est, dicendo "Ita est in re," potest unico conceptu de ly est utrumque significari et representari in eadem enuntiatione, dicendo "Hoc est illud," v.g. "Homo est albus"; non solum copulando praedicatum subiecto, sed etiam affirmando: ita quod ly est non solum sumatur absolute per modum copulationis, sed etiam comparative per modum commensurationis ad id quod est in re: quod est componere et dividere comparative sive mensurative, non solum copulative" (John of St. Thomas, Cursus Theologicus, In Primam Partem, Disp. 22, a. 3, 2^o p^o).

2. - End of the Study of the Enuntiation

St. Albert points out a double end of the consideration of the enuntiation. The principal and proximate end is to teach the formation of a discourse which interprets reality, ⁽¹⁾ stating what is or is not; the proximate end, in other words, is to teach the formation of an instrument apt for the signification of the true.

The remote end is knowledge of the syllogism. ⁽²⁾ St. Albert points out a certain similarity of relations between the disposition of the universals in their categories and the division of the genera with respect to knowledge of the simple unknown by definition on the one hand, and the consideration of the enuntiation with respect to knowledge of the composite unknown on the other. As definition presupposes the disposition of the universals in their categories, so enuntiation is presupposed to argumentation, ⁽³⁾ for knowledge of the true can be obtained only from truths enuntiated. ⁽⁴⁾ The reason, therefore, must know how to enuntiate the true if it is to argue, and, since enuntiations are the remote matter of syllogisms, ⁽⁵⁾ a knowledge of the

- (1) - "Notandum est quod substantialis principalis huius scientiae finis est constituere orationem interpretativam de re sub sermone veram interpretationem et perfectam perficientem..." (In I Periherm., Tract. I, ch. 2).
- (2) - "...Uterius autem habet finem: quia ordinatur ad syllogismum per quem scitur ignotum per notum in oratione interpretativa" (Ibid.).
- (3) - In I Periherm., Tract. I, ch. 1.
- (4) - "...Sed enuntiativa oratio praesentis considerationis est. Cuius ratio est, quia consideratio huius libri directe ordinatur ad scientiam demonstrativam, in qua animus hominis per rationem inducitur ad consentiendum vero ex his quae sunt propria rei; et ideo demonstrator non utitur ad suum finem nisi enuntiativis orationibus, significantibus res secundum quod earum veritas est in anima" (In I Periherm., lect. 7, n. 87).
- (5) - "Et ideo materialiter et finaliter ordinatur ad syllogismum interpretatio. Quia autem materialiter non ut materia

essence and properties of the enuntiation is a necessary prerequisite to a distinct knowledge of argumentation.

The kind of discourse which is the subject of this part of logic is not that signified by the word proposition. The enuntiation is the remote matter from which syllogisms are formed, and it is possible to enuntiate without syllogizing. The proposition is the proximate matter into which the syllogism is first resolved and there is no proposition outside the syllogism. The relation constituting the enuntiation is that of sign to thing signified; the relation formally constitutive of the proposition is that of principle with respect to something else that is concluded from it. (1)

(2) The enuntiation is known as it is in itself, independently of all reference to the syllogism; the proposition is a second intention encountered when the syllogism is resolved into its material parts in the consideration of the third operation; it is itself resolved into second intentions different from those into which the enuntiation is resolved, it is defined

propinqua vel necessaria (sic enim ad syllogismum se habet propositio), sed sicut materia remota potens esse sub forma syllogismi. Finaliter autem ordinatur: quia quaeritur propter syllogismum, in quo posita elicit ignoti notitiam" (St. Albert, In I Periherm, Tract. I, ch. 2).

(1) - "...enuntiatio secundum esse enuntiationis et secundum rationem nominis refertur ad rem designatam et interpretatam per enuntiationem, propositio autem dicit orationem indicativam non ad rem designatam relativam, sed pro altero (quod per ipsum probatur) positivam, secut praemissa virtutem et rationem habet principii comparata ad conclusionem" (St. Albert, In I Prior. Anal., Tract. I, ch. 3).
John of St. Thomas admits this difference between enuntiation and proposition, but treats the subject of the second part of logic under the name proposition.

propositio

differently from the enuntiation, and it is subject of different relations than the enuntiation.

The consideration of the enuntiation proceeds scientifically. The simple enuntiation is considered first. The mode of science calls for a knowledge of the subject in its own nature prior to demonstration of its properties; hence the first steps are the resolution of the enuntiation into its proper material parts and its definition, then it is divided into its subjective parts and its properties are demonstrated of it. After the simple enuntiation, the consequences of enuntiations, including modal enuntiations, remain to be considered. (1)

As St. Albert points out, although the mode of procedure is strictly that of science, still this part of logic fulfills the common notion of art in the measure that in knowing the enuntiation, it teaches how to make or generate an enuntiation. (2)

3. - The Noun and the Verb and the Definition of the Enuntiation.

In every science the essence of the subject must be determined prior to the demonstration of the properties of that subject. Knowledge of the essence, however, requires the determination of those elements that compose the subject as its proper material principles. Accordingly, the consideration of the enuntiation must begin by the determination of

- (1) - For a summary of the mode of procedure in the consideration of the simple enuntiation, see St. Albert, In I Periherm, Tract. I, ch. 3.
- (2) - "Potest etiam dici, quod hic mos artis est: quia ars est circa generationes rerum per artem constitutarum: hic autem principia dantur et praecepta quibus constituitur interpretatio sive enuntiatio" (Ibid., ch. 2).
- (3) - Cf. In I Post. Anal., Lect. 2.

(1)

its material parts. These essential parts of the enunciation are the noun and the verb; they are the first principles of a distinct knowledge of the enunciation and this part of logic must begin with their consideration. (2)

These two intentions must be defined and the aptitude of their composition with one another to signify an intellect in which the true or the false is found, together with the impossibility of enunciation except through their composition, must be manifested.

In the second operation of the reason objects are so composed that one is known to be in or not to be in the other. This composition can be signified only by predicating something of something else.

These considerations are the principles of the logician's definition of the noun and the verb, as distinct from the grammarian's; the former considers the noun in so far as something can be predicated of it, and the verb as it can be predicated of something else, and defines both accordingly. (3)

Both the noun and the verb are sounds of voice which signify conventionally, no part of which signifies separately. (4)

The specific difference which distinguishes the two is that the noun signifies without

(1) - "...Et quia omnis scientia praemittit ea quae de principiis sunt; partes autem compositorum sunt eorum principia, ideo oportet intendenti de enuntiatione praemittere de partibus eius" (In I Periherm., lect. 1, n. 4).

(2) - "...Ad tractandum ergo de enuntiatione oportet primum consistere, quid sit nomen, et quid sit verbum, secundum acceptum logicam: quia compositum non cognoscitur nisi sciat ex quo et qualibus est: quia principia esse compositi sunt componentia. Et quia sunt principia in esse, sunt etiam principia sciendi rem illam, cujus ista sunt principia" (St. Albert, In I Periherm., Tract. I, ch. 3).

(3) - "Nomen autem prout hic statuitur, statuitur secundum formam qua de ipso aliquid potest enuntiar" (Ibid.).

(4) - In I Periherm., lectiones 4 et 5.

time, whereas the verb signifies with time, and is always the sign of those things that are predicated.

The noun and the verb are considered in their relation to the intellect, that is, as they are signs of the concepts of the intellect.

Seen thus, the noun (nomen) is a word that signifies some determined nature known or some individual possessing a determined nature. (1)

Because a nature in itself is not measured by time, but only in so far as it is subject to movement, the noun signifies its object, so to speak, in a state of rest, or without movement; since it is movement that is measured by time, the noun signifies without time. (2)

It is because of this that the noun is apt to be the subject of an enuntiation; since this subject, as the subject of inherence of something else and of predication, must be itself something stable and permanent, it must be signified by a word that does not connote movement or time, that is, by the noun as defined. (3)

It is the reference to signification with time that formally distinguishes the verb from the noun. Verbs, in so far as they signify some determined action or passion, have in common with nouns that they signify some nature or substance. What is proper to the verb, dividing

(1) - "...Omne enim nomen significat aliquam naturam determinatam, ut homo; aut personam determinatam, ut promereri; aut utrumque determinatum, ut Sortes" (In I Periherm., lect. 4, n. 48).

(2) - "...Substantia autem secundum se considerata, prout significatur per nomen et pronomen, non habet in quantum huiusmodi ut tempore mensuretur, sed solum secundum quod subicitur motui" (Ibid., n. 42).

...per hoc habet nomen, quod est enuntiationis subiectum: quia sic habet esse stans et fixum, et manens est substantia in seipsa, de qua aliquid potest enuntiar quod inest ei" (St. Albert, In I Periherm., Tract. II, ch. 4).

(3) - "...propter hoc ergo quod nomen significat substantiam de qua enuntiat quod enuntiat, oportuit nomen significare rem sine tempore" (St. Albert, Ibid.).

it from the noun, is that it is the kind of word used by the reason to signify action or passion according to the mode of action or passion, that is, as it proceeds from the substance. ⁽¹⁾ It is for this reason that the verb consignifies time, because motion is measured by time, known to us in time, and signified by us with time. ⁽²⁾

In the definition of the verb a second note is added, namely that it is always the sign of predication, by which is indicated that, whereas the noun can be found on the side either of the subject or predicate, the verb, as such, is always placed on the side of the predicate, but never on the side of the subject. ⁽³⁾ The reason for this is that it pertains to action as such to inhere; ⁽⁴⁾ but it is the inherence that is expressed by the predicate, since it is that which is in that is said of; ⁽⁵⁾ the sign of predication, therefore, must be a word that signifies something as proceeding from and inhering in something else. It must, therefore, be a word that consignifies time; hence the formal predicate is always a verb and a verb, as defined, can be only predicate. Consequently the use of a verb is essential to express the composition or division of the mind: "...in omni predicatione oportet

- (1) - "...Potest autem actus significari tripliciter...alio modo, per modum actionis ut scilicet est egrediens a substantia et inherens ei ut subiecto, et sic significatur per verba" (In I Periherm., lect. 5, n. 56).
- (2) - "...Curro vero, cum sit verbum significans actionem, consignificat tempus, quia proprium est motus tempore mensurari; actiones autem nobis notae sunt in tempore. Dictum est autem supra quod consignificare tempus est significare aliquid in tempore mensuratum" (Ibid., n. 58).
- (3) - "...verbum...semper ponitur ex parte praedicati, nunquam autem ex parte subiecti, nisi sumatur in vi nominis." (Ibid., n. 59).
- (4) - "...verbum significat actionem per modum actionis, de cuius ratione est ut inherere" (Ibid.).
- (5) - "...Inesse autem in eo quod inest, causa est praedicationis de altero" (St. Albert, In I Periherm., Tract. III, ch. 1).

esse verbum, eo quod verbum importat compositionem, quia praedicatum componitur subiecto." ⁽¹⁾ It is impossible to form a perfect instrument for the signification of the true other than by the composition of a noun and a verb. ⁽²⁾

Although in any enumeration a noun is always subject and the formal predicate always a verb, the terms noun and subject and verb and predicate are not synonymous and the question answered by the noun and the verb cannot be answered by subject and predicate. The noun and verb are defined above; the subject is that about which something is said and the predicate is that which is said about something else. The question answered by the noun and the verb is: of what kinds of words is the enumeration composed as of its proper material parts? As the component elements, these words must be prior by nature to that which is composed of them. The noun and the verb, as defined, are so prior, but subject and predicate are posterior in nature to the enumeration, since they presuppose an enumeration already formed in which they can be designated. ⁽³⁾

- (1) - In I Periherm., lect. 5, n. 59.
- (2) - John of St. Thomas treats the noun and the verb in the part of his logic that deals with the first operation, considering them as certain contractions of the notion of term. This is an error since the noun and verb enter into the consideration of logic only when it analyzes the enumeration. "Determinantes ergo de verbo secundum logici intentionem et de nomine, non vocamus ea subiectum et praedicatum; quamvis tamen nomen sit subiectum de quo alterum est, et verbum praedicatum quod est de altero; quia subiectum in ratione subiecti non est nisi prout est in enumeratione et stat subiectum enumerationis; et similiter est de praedicato si in ratione praedicati accipitur; et hoc modo notitia subiecti et praedicati pendet ex notitia enumerationis; et sic subiectum et praedicatum sunt posteriora in ratione quam enumeratio et non priora. Cum ergo hic quaerebamus elementa enumerationis quae in ratione priora sunt compositioni, determinabimus ista elementa sub ratione nominis et verbi, et non sub ratione praedicati et subiecti" (St. Albert, In I Periherm., Tract. I, ch. 3).
- (3)

The proposition, on the other hand, is resolved into subject and predicate because it is predication that is the cause of the syllogistic consequence; subject and predicate, although posterior in nature to the enunciation as such, are prior in nature to the proposition as such.

After the determination of the integral principles of the enunciation, its formal principles must be determined. Since the enunciation must be a composite expression, its genus is the discourse (oratio). For the understanding of the specific difference that divides the enunciation from all other kinds of discourse, it must be noted that discourse is the instrument by which the reason manifests its concepts, but the first principle of knowledge of any instrument is its end, or its use, and accordingly instruments are defined from their end. The proper use, or end, of the enunciation is the manifestation of the true or the false, and therefore the enunciation is a discourse in which there is the true or the false. (2) As to the mode in which the true or the false are in the enunciation, this, as St. Thomas points out, is according to the way the thing signified is in the sign: "dictum autem in enuntiatione esse verum vel falsum, sicut in signo intellectus veri et falsi; sed sicut in subiecto est verum vel falsum in mente." (3)

- (1) - In I Periherm., lect. 6.
 (2) - "...considerandum est quod oratio, quamvis non sit instrumentum alicuius virtutis naturaliter operantis, est tamen instrumentum rationis... Omne autem instrumentum oportet definiti ex suo fine, qui est usus instrumenti: usus autem orationis, sicut et omnis vocis significativae est significare conceptionem intellectus...dum autem sunt operationes intellectus, in quarum una non invenitur veritas et falsitas, in alia autem invenitur verum vel falsum. Et ideo orationem enuntiativam definit ex significatione veri et falsi, dicens quod non omnis oratio est enuntiativa, sed in qua verum vel falsum est" (in I Periherm., lect. 7, n.83).
 (3) - Ibid., n. 84.

Once the essence of the enunciation is known, a complete knowledge of it calls for its division into the various kinds of enunciations, the demonstration of its properties (opposition), and the consideration of the consequences of enunciations, including modal enunciations.

Unlike the logic of the first operation, that of the second must be called formal logic. Its subject is a form which contains the true or the false as the sign of an intellect in which there is the true or the false. This form remains the same independently of the matter represented; whether the subject is substance, quantity, quality, or any other of the predicaments, for instance, and whether the predicate is in it necessarily or accidentally, the composition of a noun and a verb is required and suffices to say the true or the false.

To manifest the necessity of following the proper order in logic for a distinct knowledge of each part, the dependence of a distinct knowledge of the enunciation on a knowledge of the universal, and then that of an understanding of the syllogism on the knowledge of the enunciation may be indicated.

From the consideration of the universals it is known that universality is the cause of predicability; it is because a nature is in many and communicable to many that it can be predicated of them. For this reason the sign of the predicate must be a word that signifies being in; therefore it must be that kind of word which signifies action or passion as it proceeds from and inheres in the subject; it must,

consequently, be a word that consignifies time, that is, a verb. (1)

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The importance of the knowledge provided by the study of the enunciation for a distinct knowledge of the syllogism can be manifested by examples of second intentions proper to the enunciation which determine the nature and properties of syllogisms. The relations of opposition according to contradiction and contrariety, for instance, found the laws of conversion in propositions, which laws are principles of the consequence of imperfect syllogisms. Similarly, it is in the consideration of the second operation that the qualities and quantities of enunciations are known, and these found the modes of the various figures of the syllogism; the rules for syllogisms that destroy each other are founded on the opposition of the various kinds (according to quality and quantity) of enunciations. Again, the contradictory opposition of affirmation and negation is a principle of knowledge of the dialectical proposition, as opposed to the demonstrative, for while the demonstrator accepts one or the other determinately because he has evidence of the truth, the dialectician accepts either indifferently. Lastly, the same property of contradictory opposition founds the syllogism ad impossibile.

- (1) - "Interpretatio (quae de re sicut est vel non est interpretatur) non potest fieri solo nomine, sed oportet quod verbum adiungatur: quia verbum per hoc quod significat agere vel pati quod est substantiae nominis proprium, significat id quod inest nomini. Inesse autem in eo quod inest, causa est praedicationis de altero, sicut in scientia Universalium dictum est: et ideo interpretatio de esse vel non esse rei non nisi per verbum fieri potest" (St. Albert, In I Periherm., Tract. III, ch. 1).

h. - Logic's Consideration of Words.

Both the definition and the enunciation are defined as discourse (oratio), which is a composition of words ordered by the reason; the same is true of the syllogism. Accordingly, in each of its parts logic has as its subject a certain composition of words. The formal subject of logic, however, is second intentions. Words, however, considered in themselves, are not second intentions. Words are sensible and, since they signify conventionally, artificial and contingent; second intentions, on the other hand, are spiritual, natural, and necessary. If, therefore, the formal subject of logic is second intentions, then the necessity of its consideration of words to arrive at a knowledge of second intentions, and the precise aspect under which it considers words, must be manifested. This question arises at the beginning of logic, but it suggests itself more forcefully in the consideration of the second operation than in that of the first because the enunciation is manifested by kinds of words, the noun and the verb, and Aristotle begins the Perihermeneias with the determination of the signification of words.

The necessity of logic's consideration of words is thus

indicated by St. Thomas:

"...quia logica ordinatur ad cognitionem de rebus sumendam, significatio vocum, quae est immediata ipsis conceptionibus intellectus, pertinet ad principalem considerationem ipsius" (2).

Logic is ordered to the attainment of knowledge of things; since this involves an ordering of concepts, the subject of logic is the relations

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- (1) - St. Albert, for instance, considers this question in De Praedicabilibus, Tract. I, ch. 3, and De Praedicamentis, Tract. I, ch. 1.
(2) - In I Periherm., lect. 2, n. 13.

that accrue to things as they are in the mind. ⁽¹⁾ Words, however, signify immediately the concepts of the mind, or things as they are in the mind, and through the mediation of the concepts, things themselves. ⁽²⁾ Because the concepts themselves are spiritual, logic can treat of them only through their sensible signs; ⁽³⁾ it can order the concepts only by ordering words. It considers words, therefore, as they must be ordered for the attainment of knowledge of the unknown, or in so far as certain determined dispositions of words constitute an instrument for the attainment of such knowledge. ⁽⁴⁾

St. Albert provides an example of the necessity of logic's consideration of words when he points out that the disposition of the universals in their predicaments can be accomplished only by ordering

- (1) - "...notum (per quod ignoti scientia accipitur) dupliciter consideratur, scilicet prout est res extra animam noscentis accepta, et prout est notio quaedam in anima noscentis: sic enim significativa est et illativa eius quod ignotum est... Hoc ergo modo voces significativas rerum considerat logicus et non aliter" (St. Albert, *De Praedicabilibus*, Tract. I, ch. 4).
- (2) - "...secundum Philosophum... voces sunt signa intellectuum, et intellectus sunt rerum similitudines; et sic patet quod voces referuntur ad res significandas mediante conceptione intellectus. Secundum igitur quod aliquid a nobis cognosci potest, sic a nobis potest nominari" (Ia P., q. 13, a. 1, c.).
- (3) - "Quia autem logica omnia considerat prout sunt in anima sive in intellectu ejus, qui quaerit per notum sibi venire in notitiam ignoti: gratia horum considerat de voce significante ad placitum" (St. Albert, *De Praedicabilibus*, Tract. I, ch. 4).
- (4) - "...Propter quod logicus ad se et ad alterum utitur sermone per accidens et non per se: quia sine sermone designativo procedere non potest ad notitiam ejus quod ignotum est" (Ibid.). "Solutus autem logicus sermone utitur prout est pars instrumenti, per quod solum fides fit de incognito, cum notitia ipsius ex noto arguitur per completionem argumenti" (Ibid.).

the words which signify universals; ⁽¹⁾ similarly, it is impossible for logic to treat of ens verum except through its vocal sign. As St. Albert points out, however, the mode of consideration of words is very different in the Praedicamentis from the mode in the Perihemenias. In the former, universals are ordered in their genera by ordering the words that signify them, but what are manifested are the natures and properties of the objects signified by the words; in the second, however, it is the kinds of words themselves, or their mode of signifying (with or without the time or the false, with or without time), that are the subjects manifested. ⁽²⁾ The reason for this is that the instrument for enunciating the true is produced by a composition of a certain kind of words, and is in no way dependent upon the nature of the things signified.

- (1) - "Quia autem jam in antecessantibus ad logicam probatum est, quod ad scientiam incogniti per cognitum non devenitur, nisi per dispositum sermonem ad significandum, sive homo inquirat apud seipsum per interioris dispositum sermonem, sive inquirat apud alium per sermonem exterius prolatum, sequitur de necessitate quod ordo praedicabilium non potest determinari, nisi secundum quod sub voce habet praedicabile designari. Rebus enim inquisitive incognitis uti non possumus, eo quod nec finitae sunt nobis nec praesentes: et ideo signis et vocibus uti oportet. Propter quod praedicabilia oportet considerare secundum quod vocibus significantur" (De Praedicamentis, Tract. I, ch. 1).
- (2) - "Unde autem modus significandi in voce in Praedicamentis et hic. In Praedicamentis enim est inchoatio significationis a re, et terminatur in voce. Est enim liber Praedicamentorum de decem vocibus prima principia significationibus, et secundum rerum proprietates non vocum. Hic autem in scientia de interpretatione (eo quod interpretatio fit per sermonem) est inchoatio a sermone sive voce, et terminatur in re: quia aliter non esset interpretatio. Et propter hoc multa dicuntur de interpretatione, quae accidunt ei in quantum est in voce" (St. Albert, *In I Periherm*, Tract. I, ch. 2).

Logic, as indicated, considers words in so far as their composition forms instruments for passing from the known to the unknown. Such compositions of words are the definition and syllogism and, as a prerequisite to the syllogism, the enunciation. But these kinds of discourse can be instruments for advancing from the known to the unknown only if they contain the second intentions governing this advance. To know an essence, for instance, the reason must compose concepts ordered to one another as genus and specific difference; the definition, therefore can manifest an essence only in so far as these relations are contained in the words that compose the definition. Similarly, logic, in its consideration of the second operation orders kinds of words so as to form a discourse which contains the true or the false. Thus, in sum, logic considers the kinds of discourse in so far as they contain the second intentions; the second intentions are known through the consideration of the discourses that contain them. What remains to be discovered, then, is the precise mode of being in according to which second intentions are contained in words.

St. Thomas indicates two moments than can be distinguished in the relation of words to the reason. In the first, the virtus interpretativa, which is the practical reason as it forms significative sounds of voice, makes use of natural instruments (lungs, tongue, teeth, lips) for the formation of articulate sounds. The principal cause of the word (1) and the discourse is the reason, and not the natural instruments,

(1) - "...omnis oratio est significativa, non sicut instrumentum virtutis, sicut et naturalis : quia instrumenta naturalia virtutis interpretativae sunt guttur et pulmo, quibus formatur vox, et lingua et dentes et labia, quibus litterati

because it is the reason that gives to the sounds of voice their meaning, gender, declension, conjugation, and the like, and which determines how words are to be modified and composed so as to form the various kinds of composite expressions - the interrogation, command, statement, and so on. Considered thus in their first moment, as they proceed as artificial effects from the practical reason, the meanings and forms of simple and composite sounds of voice are contingent and are the subject of grammar.

The second moment presupposes the first. Once knowledge of the form of the discourse, as this is determined by the practical intellect, has been acquired, then the reason makes use of the various kinds of discourse as instruments for the production of certain effects :

"Ipsa autem ratio est, quae movet virtutem corporalem motivam ad opera artificialia, quibus etiam ut instrumentis, utitur ratio : non sunt autem instrumenta alioquin virtutis corporalis. Et hoc modo ratio potest etiam uti oratione et eius partibus, quasi instrumentis : quantum non naturaliter significant" (1).

Thus, for instance, the practical reason makes use of the vocative discourse to gain the attention of another, of the interrogative to obtain an answer, and of the imperative, deprecative, and optative to move another to the performance of some work. (2) The speculative reason makes

et articuli soni distinguuntur : oratio autem et partes eius sunt sicut effectus virtutis interpretativae per instrumenta praedicta. Sicut enim virtus motiva utitur naturalibus instrumentis, sicut brachiis et manibus ad faciendam opera artificialia, ita virtus interpretativa utitur gutture et aliis instrumentis naturalibus ad faciendum orationem. Unde oratio et eius partes non sunt res naturales, sed quidam artificiales effectus" (In I Perihem., lect. 6, n. 81).

(1) - Ibid.
(2) - Ibid., lect. 7, n. 85.

use of the enumeration as instrument for the communication of knowledge of the true and of the syllogism for leading the intelligence of another from the known to the unknown. (1) Neither of these forms of discourse could serve as instruments for the production of these effects unless they contained the second intentions, and it is precisely according to the mode in which effects are in the instrumental cause that the second intentions are contained in the forms of discourse used by the speculative reason. The manifestation of certain notions pertaining to the causality proper to instrumental cause and the application of these notions to the word may serve to make this clear.

St. Thomas thus explains the difference between principal and instrumental cause :

"...dicendum quod duplex est causa agens, principalis et instrumentalis. - Principalis quidem operatur per virtutem suae formae cui assimilatur effectus, sicut ignis suo calore calefacit... Causa vero instrumentalis non agit per virtutem suae formae, sed solum per motum quo movetur a principali agente. Unde effectus non assimilatur instrumento, sed principali agenti : sicut lectus non assimilatur securi, sed principis quae est in mente artificis" (2).

The difference is found in the principle of the activity of the agent itself. The principal cause acts through a power which pertains to it in virtue of its own form, by which is meant any form which inheres in

- (1) - The instrumentality of words in the speculative order is here described according to the primary end of words, which is communication. Yet, as St. Albert points out (De Praedicationibus, Tract. I, ch. 1), acquisition of knowledge of the unknown, whether communicated by another, as in teaching, or attained by the efforts of one's own reason, requires the instrumentality of words.
- (2) - Illa P., q. 62, a. 1, c.

it in the manner of a complete nature, whether it possesses that form of itself or from another, whether through natural acceptance or through violence. (1) The instrumental cause, however, does not produce the effect through the power of any form possessed by the instrument, but only in so far as it is moved by the principal agent. Thus the movement by which the instrument is moved by the agent is to the instrument as is the complete form to the principal cause; just as the form possessed is the principle of the operation of the principal cause, so the movement by the per se agent is the principle of the properly instrumental operation of the instrument. In explanation of this it may be pointed out that two operations may be attributed to an instrument : a saw, for example, in virtue of its own form (hard, sharp-toothed) has the power to cut; the other is its properly instrumental operation, which is to make a cut that is straight and suitable for the goodness of the object to be made. The latter transcends the power of the saw itself and has as its principle not the form of the saw, but its movement, or use, by the principal agent; it is this that constitutes the instrument (2).

- (1) "...ad aliquem effectum operatur aliquid dupliciter. Uno modo sicut per se agens; et dicitur per se agere quod agit per aliquam formam sibi inherentem per modum naturae completae, sive habet illam formam a se, sive ab alio, aut naturaliter, aut violenter" (Q. D. de Veritate, q. 27, a. 4, c.).
- (2) "Alio modo aliquid operatur ad effectum instrumentaliter : quod quidem non operatur ad effectum per formam sibi inherentem, sed solum in quantum est motum a per se agente. Haec enim est ratio instrumenti, in quantum est instrumentum ut moveat motum; unde, sicut se habet forma completa ad per se agentem, ita se habet motus quo movetur a principali agente, ad instrumentum, sicut terra operatur ad scannum. Quavis enim terra habet aliquam actionem quae sibi competit secundum propriam formam, ut dividere, tamen aliquem effectum habet qui sibi non competit nisi in quantum est mota ab artifice, scilicet facere rectam

(1) in its esse factivo.

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Since the instrument contributes to the effect only in so far as it is moved by the per se agent, the effect is always assimilated to the principal and never to the instrumental cause. The instrument, moreover, is indifferent to the effect produced. (2)

The determination of the precise mode in which the effect is in the instrumental cause follows from the principle of the instrumental causality of the instrument, which is the movement by which the instrument is moved by the per se agent. St. Thomas determines the mode in which effects are in the instrumental cause when he answers the question : (3) whether grace is contained in the sacraments. In response to this

(1) - incisionem, et convenientem formam artis. Et sic instrumentum habet duas operationes : unam quae competit ei secundum formam propriam; aliam quae competit ei secundum quod est motum a per se agente, quae transcendit virtutem propriae formae" (Ibid.).

"Instrumentum siquidem duplicem habet actionem, scilicet propriam et instrumentalem : ut scindere est propria operatio serrae, facere vero sedem secundo est ipsius operatio duplex, ita etiam est duplex quo operatur : alterum sibi proprium, ut dentatura ferrea et acuta serrae, qua scindit, alterum a principali agente participatum, quo extenditur et facere dicitur proprium effectum. Et hoc est motus ipse quo instrumentum movetur a principali agente... Et constituit eum in esse factivo" (Cajetan, In Tertiam Partem, q. 13, a. 2, n. 5).

(2) - "Nullum est principale in qualibet actione a quo imponitur terminus et ratio ei quod fit; sicut patet in artificialibus, quod terminus vel ratio aerae vel domui non imponitur ab instrumentis, sed ab ipsa arte. Nam instrumenta quantitatem, vel aliam. Serra enim quantum est de se, apta est ad secundum lignum, secundum quod competit ei ostio, et scamo, et domui, et in quacunque quantitate; sed quod sic seceatur lignum, quod sit aptum ad talem formam et ad talem quantitatem, est ex virtute artis" (In III De Anima, lect. 8, n. 332).

(3) - Illa P., q. 62, aa. 3, 4; q. D. de Veritate, q. 27, a. 7.

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question, St. Thomas points out that grace is not in the sacraments as accidents are in their subjects, but as the similitude of the effect is contained in the cause. This can be according to various modes and in determining the precise mode in which the similitude of the effect is contained in the instrument, St. Thomas teaches that it is not there according to a similitude of natural species, as, for instance, the similitude of an effect is contained in an univocal cause, nor as the likeness is possessed in a permanent way and in a state of rest, and so that it is proportioned to the effect, as in the case of equivocal causes and causes that operate according to a spiritual or intelligible likeness of the effect. Rather the likeness of the effect is in the instrument according to the mode of being of the instrumental power as such. (2) But, since the instrumental power is not possessed by the instrument as a form inhering in itself, but is there rather only in so far as the instrument is moved by the principal cause, its being is not complete and perfect, but fluid, imperfect, impermanent, and transient. (3)

(3) Accordingly, the similitude of the effect is in the instrument as a form inhering in itself, but is there rather only in so far as the instrument is moved by the principal cause, its being is not complete and perfect, but fluid, imperfect, impermanent, and transient.

(1) - Illa P., q. 62, a. 3, ad 1; q. D. de Veritate, q. 27, a. 7.

(2) - "...sacramentum novae legis est instrumentalis gratiae causa. Unde gratia est in sacramento novae legis, non quidem secundum similitudinem speciei, sicut effectus est in causa univoca; neque etiam secundum aliquam formam propriam et permanentem, et proportionatam ad talem effectum, sicut sunt effectus in causis non univocis, puta res generatae in sole, sed secundum quandam instrumentalem virtutem" (Illa P., q. 62, a. 3, c.).

cf. q. D. de Veritate, q. 27, a. 7.

(3) - "...ponendo quod sacramentum est instrumentalis causa gratiae, necesse est simul ponere quod in sacramento sit quaedam virtus instrumentalis ad inducendum sacramentalem effectum. Et haec quidem virtus proportionatur instrumento. Unde comparatur ad virtutem absolutam et perfectam alicuius rei, sicut comparatur instrumentum ad agens principale. Instrumentum enim... non operatur nisi in

mental cause in a fluid fashion, in so far as the forms flow from the principal cause to the effect through the mediation of the instruments. (1)

St. Thomas, in answering the objection that the sacraments can not cause grace because a corporeal being cannot possess a spiritual power, teaches that such a power can be in a corporeal thing instrumentally, and exemplifies this from the power of the spoken word to effect knowledge :

"...Virtus spiritalis non potest esse in re corporea per modum virtutis permanentis et completæ... Nihil tamen prohibet in corpore esse virtutem spirituales instrumentales, in quantum scilicet corpus potest moveri ab aliqua substantia spiritali ad aliquem effectum spirituales inducendum; sicut in ipsa voce sensibilis est quaedam vis spiritalis ad excitandum intellectum hominis, in quantum procedit a conceptione mentis. Et hoc modo vis spiritalis est in sacramentis, in quantum ordinatur a Deo ad effectum spiritalium" (2).

Just as the power of the sacraments to produce grace is not possessed by them in the manner of an inherent form, but is there instrumentally, in so far as the sensible signs are elevated by God to the production of grace, so the power to produce knowledge is not possessed by words as they are sensible sounds of voice, but is in them instrumentally.

- quantum est motum a principali agente, quod per se operatur; et ideo virtus principalis agentis habet permanentem esse in natura; Virtus autem instrumentalis habet esse transiens ex uno in aliud, et incompletum" (Illa P., q. 62, a. 4, c.).
- (1) - "Quarto modo quando similitudo effectus non secundum eandem rationem, nec ut natura quaedam, nec ut quiescens, sed per modum cuiusdam defluxus est in causa; sicut similitudines effectuum sunt in instrumentis, quibus mediantibus defluunt formae a causis principalibus in effectis" (Q. D. de Veritate, q. 27, a. 7).
- (2) - Illa P., q. 62, a. 4, ad 7.

in so far as they are moved by the intelligence, which is the principal cause. The similitude of the effect, therefore, is in the words as it is in the instrumental cause.

Elsewhere, explaining this same point, namely, that a spiritual power can be in a corporeal thing according to the manner of instrumental cause, St. Thomas gives as an example "sicut sermo audibilis, existens causa disciplinae... continet intentiones animae." (1) The elaboration of this example may serve to manifest how the second intentions are in the discourse.

Words, according to their own form, are sensible sounds of voice and the effect proportioned to this form is simply to strike the ear. But they are the cause of learning (disciplina) in so far as they are used as instruments by the intellects of both the teacher and the learner. The teacher chooses and orders the words so as to form instruments for the communication of his own knowledge; the learner abstracts the intelligible intentions from them. (2) The effect produced

- (1) - "...in re corporali non potest esse virtus spiritalis secundum esse completum; potest tamen ibi esse per modum intentionis: sicut in instrumentis motis ad artificie est virtus artis; et sermo audibilis existens causa disciplinae... continet intentiones animae" (In IV Sent., Dist. I, q. 1, a. 4, ad secundam quaestionem; ad quartum).
- (2) - "...ex sensibilibus signis, quae in potentia sensitiva recipiuntur, intellectus accipiat intentiones intelligentiales, quibus utitur ad scientiam in seipso faciendam" (Q. D. de Veritate, q. 11, a. 1, ad 4).
- "...homo exterius docens non influat lumen intelligibile, sed est causa quodammodo speciei intelligibilis, in quantum proponit nobis quaedam signa intelligibilia intentionum, quas intellectus noster ab illis signis accipit, et recondit in seipso" (Ibid., ad 14).

is science in the mind of the hearer, which effect is assimilated to

(1)

the principal cause, the science of the teacher, and not to the sound of voice. Science is knowledge of conclusions, which are known through a middle term, hence the second intentions governing science are an

essential part of the effect, and their similitude is contained in the instrumental cause, which is the discourse of the master, according to the way that instruments contain the likeness of the effect. The words of the teacher must be disposed according to a certain determined order so as to form an instrument for leading the intelligence of the learner from the known to the unknown; thus his discourse contains not only the first intentions but the second as well, otherwise it is an inadequate instrument and can produce the effect only per accidens.

It is in so far as certain kinds of discourse are instruments of the speculative reason and accordingly contain the second intentions that they fall under the consideration of logic. The logician's consideration of the noun and the verb, for instance, is very different from the grammarian's, for the former considers them only in so far as they are the kinds of words that must be composed by the reason for the formation of a discourse that is an instrument for signifying the true.

- (1) - "...docens non dicitur transfundere scientiam in discipulum, quasi illa eadem numero scientia quae est in magistro, in discipulo fiat; sed quia per doctrinam fit in discipulo scientia similis ei quae est in magistro, educta de potentia in actum" (Ibid., ad 6).
- (2) - "...secundum hoc unus alium docere dicitur, quod istum discursum rationis, quem in se facit ratione naturali, alteri exponit per signa et sic ratio naturalis discipuli, per huiusmodi sibi proposita, sicut per quaedam instrumenta, pervenit in cognitionem ignotorum" (Ibid., c.).

As a final observation on the word as instrument it may be pointed out that words are instruments in a secondary rather than in the proper sense. For the notion of instrumental cause is fulfilled perfectly only in the line of efficiency, for it is only efficient cause that is properly movens motum. The word, however, like the phantasm with respect to the agent intellect, is rather an extrinsic formal cause.

CHAPTER V.

THE THIRD OPERATION OF THE REASON.

1. - Subject of This Part of Logic.

According to St. Albert's division of logic into two parts given in Chapter Two, the second part has for its subject argumentation, the means for attaining knowledge of the truth or falsity of an ignotum complexum. As is indicated in the texts cited, this part studies the syllogism, which St. Albert calls the proprium instrumentum for the attainment of such knowledge, and the other kinds of argumentation. The syllogism itself, because it is a composition of form and matter, is the subject of several different considerations. Consequently the subject of this part of logic is itself divided into several different parts. St. Thomas, in his commentary on the Posterior Analytics explains this multiplicity and identifies the various kinds of argumentation.

St. Thomas speaks first of the third operation as the act by which the reason discourses from one to another. The verb discurre here signifies an operation of the reason by which from a notum complexum it proceeds to knowledge of an ignotum complexum :

"Tertius vero actus rationis est secundum id quod est proprium rationis, scilicet discurre ab uno in aliud, ut per id quod est notum deveniat in cognitionem ignoti" (1).

After thus distinguishing the third operation from the first two, he proceeds to point out that there are several different kinds of discourse, or processes of the reason from the known to the unknown, the principle distinguishing them being their power to produce certain knowledge.

(1) - In I Post. Anal., proemium, n. 4.

According to this principle, discourse is divided into three kinds. Of these the first concludes the true necessarily, producing the absolute and unqualified assent proper to the intellectual virtue of science; the second concludes the true for the most part but not necessarily, and accordingly admits of doubt about the truth concluded; the third fails to conclude the true because it involves the violation of some necessary principle governing reasoning. (1)

After giving this first division, St. Thomas proceeds to a brief manifestation of each of these processes. The first is the perfection of the act of reason, effecting an absolutely certain assent, that is, an adherence of the intelligence to one part of a contradiction with no fear of the possibility of the truth of the opposite. St. Thomas denominates the part of logic which is concerned with this process the Pars Indicativa and Pars Resolutoria because the certain assent proper to science is consequent upon a judgment, and such a judgment can be accomplished only by resolution into first principles :

"Pars autem logicae, quae primo deservit processui, pars indicativa dicitur, eo quod iudicium est cum certitudine scientiae. Et quia iudicium certum de effectibus haberi non potest nisi resolvendo in prima principia, ideo haec pars Analytica vocatur, idest resolutoria" (2).

A brief consideration of the notions here signified by the words judgment and resolution will serve to manifest the nature of this process, sufficiently to distinguish it from the others.

The logical intention here signified by the word judgment is an act of comparison or measurement, by which some emanation is compared

(1) - Ibid., n. 5.
(2) - Ibid., n. 6.

with, examined against, or measured by, some principle of knowledge already possessed. It is through such a comparison, measurement, or examination that evidence is obtained for the truth or falsity of the enunciation, or, in other words, that the complexum is seen to be true. Evidence is absolutely necessary for the intellectual virtues of intellect and science: "...certitudo quae est in scientia et intellectu est ex ipsa evidentia eorum quae certa esse dicuntur." (1) So far as science, which is the habitus conclusionum, is concerned, this evidence is obtained when the truth of a composition or division is seen to be contained necessarily in certain other truths, which are first principles, evident of themselves. When the composition is resolved into such principles it is seen to be true: "...ea quae in ista principia resolvare possumus, dicuntur videri." (2) When evidence is thus attained, the composition is said to be judged, the assent of the intellect is given, and the discourse rests.

It is the process by which this vision of the truth of an enunciation is seen to be contained in other truths that is here signified by the word resolution. Resolution presupposes that the enunciation is already known as a conclusion from premises; the resolution is then effected by an examination of the relation of subject and predicate expressed in the conclusion in the light of the premises; by this examination the reason sees in the latter, which are first principles, necessarily true and evident of themselves, the evidence for this relation. Upon the attainment of this evidence the reason cannot fail

(1) - In III Sent., D. 23, q. 2, a. 2, sol. iii.
(2) - Ibid., D. 24, a. 2, sol. i.

to give its assent. Thus the movement of the reason in its judicative process, formally considered, is a movement from conclusions to premises: "... rursus in via iudicii resolvendo reddit ad prima principia, ad quae inventa examinat." (1)

It is because the first process of the reason thus judges through resolution that the part of logic which is concerned with it is called pars indicativa and pars resolutoria. This part teaches those second intentions which must be known in order to judge, or resolve, or to recognize an irrefutable proof. Because these second intentions are of two distinct kinds, this part of logic, as St. Thomas remarks, is divided into two parts:

"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" (2).

To resolve, the speculative scientist must see that the form of his reasoning is such that it calls for the inherence of the predicate of the conclusion in the subject; for this he must know the syllogism which, while not always effective of judgment, is still the only form of reasoning capable of producing a judgment. The simple syllogism, or the syllogistic form, therefore, is one of the subjects of the pars indicativa. Moreover, he must see that the relations existing between the objects represented in his syllogism are such that what is represented in his conclusion cannot be otherwise; for this he must know the requisite

(1) - Ia P., q. 79, a. 8, c.
(2) - In I Post. Anal., proemium, n. 6.

conditions on the part of the matter - for instance that the propositions be necessary with a per se necessity. That kind of syllogism in which the necessary conditions on the part of the matter hold good is the demonstrative syllogism, the instrument of resolution; which forms the second subject of the pars resolutoria.

It may here be recalled that it is this part of logic, actually one part of the logic of the third operation, which John of St. Thomas effectively substitutes for the whole of logic in making his initial division. Assuming this as the whole subject, he then divides logic according to the resolution ex parte formae and the resolution ex parte materiae.

As the first part of the logic of the third operation is called judicative because it considers the act of judgement, the second part is called inventive because it has for its subject those processes that are limited to the discovery of conclusions; of themselves these processes cannot produce the assent of certitude because they do not judge the conclusion discovered :

"Secundo autem 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". (1).

In the processes called inventive, the movement of the reason differs from that of resolutive reasoning. In the latter this movement is from conclusions to principles in the sense explained above; in the former the reason passes only from premises to conclusions, knowing the conclusions from the premises; but the conclusions await resolution into

(1) - Ibid.

principles before the assent of scientific certitude can be given. In a single passage in the Summa Theologiae St. Thomas thus contrasts the two movements :

"...discursus talis est procedentis de noto ad ignotum. Unde manifestum est quod, quando cognoscitur primum, adhuc ignoratur secundum. Et sic secundum non cognoscitur in primo, sed ex primo. Terminus vero discursus est, quando secundum videtur fini primo, resolutis effectibus in causas, et tunc cessat discursus" (1).

Inventive reasoning, therefore, includes all reasoning processes whose nature is as here described; it is not to be confused with induction.

St. Thomas divides the inventive processes of the reason into three kinds. This is a division into grades, the three processes being distinguished by the proximity to certitude of the knowledge they

(2) effect. The most perfect of these is dialectical reasoning which, because it proceeds from probable premises, produces opinion, which is

the total assent of the reason to one side of a contradiction, but with fear of the truth of the opposite. Such reasoning is the subject of Aristotle's Topics. The second effects no more than suspicion, which implies no assent, but merely a greater inclination of the reason to one side of a contradiction than to the other. Such reasoning constitutes the subject of Aristotle's Rhetoric. The last process produces a certain

(1) - Ia P., q. 14, a. 7, c. For a discussion of resolutive and inventive discourse, see Edmund Dolan, F.S.C., "Resolution and Composition in Speculative and Practical Discourse," Laval Théologique et Philosophique, VI (1950) 33-36.

(2) - "Sicut autem in rebus naturalibus, in his quae ut in pluribus agunt, gradus quidem 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" (in I Post. Anal., proemium, n. 6).

estimation of one part of a contradiction; this is the subject of the Poetics.⁽¹⁾

The last process of the reason, that which is intrinsically incapable of effecting knowledge, is sophistical reasoning, which is the subject of Aristotle's de Sophisticis Elenchis.⁽²⁾

For St. Thomas the resolutive and all of the inventive

processes fall under the consideration of logic (Rationalis Philosophia) because each is an operation of the reason (ratio) advancing from one to another. This explanation may be developed somewhat by pointing

out that each of these processes involves the construction by the reason of aliquid in similitudinem operis, that is, of a certain form

of argumentation, or a certain kind of instrument, proportioned to the diverse kinds of matters with which the various kinds of discourse are concerned. Thus the form of argumentation which is the instrument of

resolution is the demonstrative syllogism, that of dialectic is the dialectical syllogism, that of rhetoric is the enthymeme, and that of poetry the metaphor. In the measure that the reason has need of

direction for the proper construction of all, they all pertain to the subject of logic. The last process, which makes use of the sophistical syllogism, also pertains to the subject of logic,⁽⁵⁾ not because it is

- (1) - Ibid.
- (2) - Ibid.
- (3) - "Omnia autem haec ad Rationalem Philosophiam pertinent : inducere enim ex uno in aliud rationis est" (Ibid.).
- (4) - "Hic tamen modus secundum materiam in qua ponitur, variatur secundum diversitatem materiae in qua quaeritur scientia" (St. Albert, De Praedicabilibus, Tract. I, ch. 7).
- (5) - "Tertio autem processu rationis deservit pars Logicae, quae dicitur Sophistica, de qua agit Aristoteles in libro Elenchorum" (In I Post. Anal., proemium, n. 6).

an instrument for passing from the known to the unknown, but for a negative reason, namely that the scientist may escape deception in the use of dialectical and demonstrative reasoning.⁽¹⁾ Accordingly, the part of logic which treats of the third operation, taken in all its amplitude, is divided into six parts according to these six subjects : the syllogistic form, the demonstrative syllogism, the dialectical syllogism, the rhetorical enthymeme, the poetical image and the sophistical syllogism.

Although argumentation in all its amplitude is thus the subject of the logic of the third operation, there is nevertheless a sense in which this subject can be said to be the syllogism. As logic is considered as the instrument of philosophy, its subject is those modes of knowing used by the philosopher in his acquisition of science. But the only forms of reasoning used in science as such are the syllogism and induction and induction as a form is reducible to the syllogism.

As logic is understood, therefore, as the instrument of philosophy, the syllogism is the subject of this part and its consideration is divided into four separate parts.⁽²⁾

The first part considers the syllogistic form of reasoning

- (1) - "Ne autem fiat deceptio circa ea quae dicta sunt, inventa est scientia de sophisticis elenchis" (St. Albert, De Praedicabilibus, Tract. I, ch. 7).
- (2) - St. Albert holds that logic may be taken thus in a strict sense so that its subject is the syllogism : "...logica comprehendit logicam strictae dictae, cuius una pars est dialectica : quia logica strictae dicta est de syllogismo omni, tam simpliciter accepto, quam dialectico, quam demonstrativo, quam etiam sophisticis" (In I Topicorum, Tract. IV, ch. 2). Opposed to this is logic in the wide sense, which for St. Albert includes the whole trivium and quadrivium (Ibid.).

in itself, or the simple syllogism, resolving it into its proper material parts, defining it, determining the principles that effect its consequence, its figures and their useful modes, and its powers to conclude. Moreover, this part considers those forms of reasoning which are syllogistic in an analogous sense; principal among these is induction which, while ⁽¹⁾ not a syllogism, because its term is first and immediate propositions, whereas it is essential to the syllogism that its conclusions follow from a middle, is denominated syllogism in a secondary sense because ⁽³⁾ the matter of the induction can be reduced to syllogistic form; it is by such a reduction that the power of the induction to conclude is manifested. Like the syllogism, induction is a form of reasoning common

- (1) - For the reduction of other forms of reasoning (i.e., induction, example, deduction, instance, and enthymeme) to the syllogism, see St. Albert, In II Prior. Anal., Tract. VII. It may be remarked that the metaphor, the instrument of poetry, is not included among these forms. This autem sic habitis, de reductione aliarum argumentationum in syllogismum dicendum est. Primum autem de inductione : quia plus inter alias habet de forma argumentationis. Omnia autem credimus fidem accipiendi, aut per syllogismum, aut per inductionem : sub his enim duobus comprehenditur exemplum et enthymema" (St. Albert, In II Prior. Anal., Tract. VII, ch. 4).
- (2) - "...ut quia inductio nullam habet necessitatem nisi a syllogismo, ideo non habet specialem artem in qua determinetur de ipsa sicut habet syllogismus" (Ibid.).
- (3) - "Differentia autem inductionis ad syllogismum (quod conclusiones ipsorum) est haec, quod inductio est propositionis primae et immediatae. Syllogismus autem est quoad conclusionem propositionis mediatæ : propositionum enim quarum est medium syllogismus est talium propositionum per medium illud quod habent : quarum autem propositionum non est medium sicut principiorum, est fides per inductionem" (Ibid.).
- (4) - "Dicendum quod inductio in syllogismum reducitur materialiter et non formaliter, ita quod forma inductionis reductur in formam syllogismi : sed quia materia nunc existens sub forma inductionis reducitur ad acceptionem formae syllogisticae. Syllogismus enim communiter dicto non opponitur inductio : quidam sic numerando syllogismum est verum dicere, quod inductio est syllogismus, sed syllogismo proprie dicto opponitur inductio" (Ibid.).

both to demonstration and dialectic. ⁽¹⁾

The second part considers demonstration, which is the syllogistic form as it is found in necessary matter, determining the proper material elements of the demonstrative syllogism (subject, proper passion, and principle), defining it, and determining the relations required among its terms. ⁽²⁾ Demonstration is an essential part of the subject of this part because it is properly the instrument of science.

The third part deals with the dialectical syllogism, elaborating the method for terminating problems in any matter, whether speculative or practical. Possession of the method consists in a knowledge of the parts of the dialectical syllogism, (problem, proposition, predicates), and of the loci, which are sources of arguments for and against probable propositions. Although dialectical reasoning can never produce science, it is none the less an instrument of science as dispositive for it in the measure that it discovers the probably true in the order of universal,

- (1) - "Attendendum autem est hic, quod hic determinatur de inductione proit communiter se habet ad dialecticum et demonstrationem, in Topicis autem proit se habet ad dialecticum tantum" (Ibid.). Induction can never cause science proper quid; in proper quid demonstration, induction is presupposed to knowledge of first principles, but is not the cause of the assent thereto, this is their own evidence (See St. Thomas, In I Post. Anal., lect. 30; II Post. Anal., lect. 20). The nature of dialectical induction is thus expressed by St. Albert : "...Ad inductionem autem probabilem sufficit de pluribus inductio, dummodo non videatur instantia" (In II Prior. Anal., Tract. VII, ch. 4). See also St. Albert, In I Topicorum, Tract. III, ch. 4).
- (2) - On the conditions requisite for a demonstrative syllogism, see O'Flynn, "The First Two Meanings of 'Rational Process' according to the Expositio in Boetium de Trinitate," (Faculty of Philosophy, Laval University, 1951), p. 43 ff. (Abstracted.)

scientific reasoning. The accumulation of probable arguments in favor of one side of a contradiction can incline the reason to assent to that side, disposing it to seek the cause.

(1)

The last part considers the sophistical syllogism, which is the syllogistic form in matter that appears to be either dialectical or demonstrative, but is not; this part pertains to logic because of the negative reason mentioned above.

(2)

These four parts have been given in the order in which they are to be considered. The syllogism, as a form common to the three kinds of syllogism as genus to species, is a principle of knowledge of them and must be known first. Then, although inventive reasoning precedes resolutive in the sciences, demonstration, as the perfection of the act of reason, is prior by nature to dialectic and is to be known prior to it.

(3)

- (1) - "Quandoque autem inquisitio rationis usque in ultimum terminum non perducit, sed sistitur in ipsa inquisitione, quando scilicet inquirenti manet via ad utrumlibet; et hoc contingit, quando per probabiles rationes proceditur, quae natae sunt facere opinionem et fidem, non autem scientiam, sic rationalis processus distinguitur contra demonstrativum. Et hoc modo procedi potest rationabiliter in qualibet scientia, ut ex probabilibus pareatur via ad necessarias conclusiones" (*De Trinitate*, lect. 2, q. 2, ad 1). On the nature of dialectical reasoning, see O'Flynn, op. cit., pp. 67, ff.
- (2) - For summaries of the diverse considerations of the syllogism, see St. Albert, *In I Prior. Anal.*, Tract. I, ch. 1; *In I Toplicorum*, Tract. I, ch. 1; *In I De Sophisticis Elenchis*, Tract. I, ch. 1.
- (3) - "...quantis inventio quoad nos prior sit resolutione, eo quod non potest resolvi et iudicari nisi quod iam inventum est, tamen quia omnis resolutio est ad priora secundum naturam, quia non resolvitur nisi vel posterius in prius, vel compositum in simplex, vel materiale in sum

This division of the logic of the third operation has been given because, as a sub-division of the third part named in Chapter Two, it pertains to the divisions of the whole of logic. What is here of interest is the identification of all those subjects that must be treated if logic is to be an adequate instrument of philosophy; this identification is impossible without this subdivision. In addition to this division itself, another consideration relative to the third operation also interests the divisions of logic; this is the manifestation of the necessity of following the proper order in the study of the three operations. It was remarked in the preceding chapters that part of the role of the proper initial division is the determination of the order to be followed, and this order is essential for a distinct knowledge of the syllogism. The necessity of the proper order may be shown through the consideration of certain notions pertaining to the simple syllogism and demonstration, which notions cannot be understood without a prior knowledge of the intentions pertaining to the first operation of the reason. These are: (1) the resolution of the simple syllogism into proposition and term, (2) the cause of the syllogistic consequence, namely, the principles *dicti de omni et nullo*, (3) the meanings of major, minor, and middle term, (4) the rules for the discovery of middle terms, and (5) the dependence of demonstration on a knowledge of the predicamental order.

formale principium: et ideo ars resolvendi et iudicandi secundum rationem resolutionis est ante artem inventiendi" (St. Albert, *In I Prior. Anal.*, Tract. I, ch. 1). See also *In I Toplicorum*, Tract. I, ch. 1.

2. - Resolution of the Syllogism into Proposition and Term.

Since the syllogism is a kind of discourse (composition of words ordered by the reason), the first step in the attainment of a distinct knowledge of it is its resolution into the material principles which are proper to it and to no other kind of discourse. This resolution is twofold: the syllogism is immediately resolved into the proposition; then, because the proposition is itself a discourse (oratio), into the terms. (1)

With respect to the proposition, the relation that distinguishes it from the enunciation has already been remarked in the preceding chapter. This difference of relations appears in the difference of the definitions of these two intentions, for the proposition is defined, not by the signification of the true or the false, but by predication; it is a discourse in which something is affirmed or denied of something else. (2)

As regards the term, by this word is here meant those ultimate simple elements into which the proposition is resolved and with which, accordingly, the resolution of the syllogism terminates. (3)

Since what is formal to the proposition is predication, the terms are not the noun and the verb, but that of which something is said, and

(1) that which is said of it, i.e. subject and predicate.

With respect to term and proposition, two points are of interest to the divisions of logic. The first is that the intentions signified by these names are the elements into which the syllogism is resolved and, consequently, cannot be subjects assigned to the first and second operations. The second is the explanation of the resolution of the syllogism into proposition and subject and predicate as these are defined above, that is, through predication; for this explanation manifests the necessity of a knowledge of the first operation of the reason for a distinct knowledge of the syllogism. Predication is formal to the proposition because predication is the cause of the syllogistic consequence; this may be made manifest by a brief consideration of the operation of the principles dicti de omni and dicti de nullo, and secondly of the meanings of major, minor and middle term. Because an understanding of all of these notions is dependent on a knowledge of the universal, the consideration of the first operation must precede that of the third.

3. - The Principles dicti de omni et nullo.

Reflection on any enunciation reveals that in it something is said or denied of something else. What permits this is the relation of universality attached to what is predicated or denied; because a nature is conceived as being in, or participated by, many, it may be said of

(1) - "...Proxime enim partes et substantiales propositionis non sunt nomen et verbum, quia propositio dicit aliquid de aliquo: et ideo pars ejus est subiectum quod dicit id de quo aliquid dicitur sub ratione quae substat illi quod dicitur de ipso: et talem rationem non habet nomen, ut nomen est. Similiter praedicatum dicit id quod de alio dicitur sub ratione inherendi quae dicitur de subiecto, quod non dicit verbum in quantum verbum est" (Ibid., ch. 4).

them. When the distributive sign, all or every is attached to the subject of the predication, the universality of the predicate is extended to all the subjective parts of that subject. It is this mode of predication that is signified by the principle dici de omni :

"...aliquid praedicari dicitur de omni siue universaliter per comparationem ad ea, quae continentur sub subiecto. Tunc enim dicitur aliquid de omni, ut habetur in libro Priorum, quando nihil est sumere subiecti, de quo praedicatum non dicitur" (1).

Similarly, something is predicated of none when the sign no (nullus) is added to the subject; by this is signified that there is no subjective part of the subject of which the predicate is said.

In the first figure of the syllogism the causality of this principle with respect to the consequence is manifest. In this figure the middle term is subject of the major premise and predicate of the minor. In the major premise of the affirmative modes, the predicate, which is the predicate of the conclusion, is said of all the middle; by this it is signified that the predicate is in all the subjective parts of the middle. The minor premise signifies that the subject of the conclusion is among these subjective parts; hence it follows necessarily that the predicate of the conclusion is said of and is in all of the subject. Accordingly, the necessity of the consequence is perfectly manifest in the first figure; in the case of the second and

- (1) - In I Post. Anal., lect. 9, n. 78. See also, St. Albert, In I Prior. Anal., Tract. I, ch. 7.
- (2) - Perfecti sunt igitur omnes hujus figurae syllogismi, tam universales quam particulares; et perficiuntur per ea quae a principio istius libri dicta sunt, scilicet per dici de omni, et dici de nullo" (St. Albert, In I Prior. Anal., Tract. II, ch. 5).

third it must be manifested by reducing them to the first.

From this consideration it follows that it is the fact that something is said or denied of something else in the propositions that is operative in causing the consequence and making the syllogism; for this reason the proposition is defined through predication and resolved in the subject and predicate. Moreover, in the measure that the syllogistic consequence derives ultimately from universality, as described above, a distinct knowledge of the simple syllogism is dependent on knowledge of the intentions attached to the simple concept in the first operation, a consideration which justifies St. Albert's insistence that the first notion treated in logic must be the universal, and marks the mode of procedure of John of St. Thomas as faulty. For the latter holds that the principles dici de omni et nullo are causes of the syllogistic consequence and that these principles are known from the very notion of the universal. His initial division, however, compels him to treat the syllogism, which pertains to formal logic, prior to the universal, which pertains to the resolution ex parte materiae. Accordingly, if his mode of procedure is followed, a distinct knowledge of the syllogism is impossible; the intellect is held, as it were, in suspense, until the universal is reached.

- (1) - De Praedicabilibus, Tract. II, ch. 1.
- (2) - Log. I. P. Summum, Bk. III, ch. 10, p. 73.
- (3) - "Et haec principia sunt per se nota, quia natura universalis in hoc consistit, quod dicitur de omnibus, respectu quorum universalis est" (Ibid., p. 74).

4. - Meaning of major, minor and middle terms.

A point of doctrine closely bound to the explanation of the syllogistic consequence and similarly dependent on the notion of universality, is the meaning of major, minor, and middle terms. It was mentioned in the first chapter that John of St. Thomas identifies these from their position in the syllogism, the major and minor being those which appear in the conclusion and the major and minor premises respectively, and the middle that which appears in both premises but not in the conclusion. Major and minor premises he identifies only by saying that the former is first and the other second; no explanation of this priority is given. But this explanation reverses the order of denomination. The major and minor premises are so called because they contain the major and minor terms respectively. The names major and minor are imposed on the terms because they stand to the middle in a relation of greater and less. ⁽²⁾ This can be clearly seen in the first figure.

(1) - Log. I. P. Summul. Bk III, ch. 4, p. 63.

(2) - It may here be noted that the id a quo nomen imponitur on major, minor, and middle differs from the id a quo nomen terminus imponitur on subject and predicate. The latter are called terms because with them the resolution of the syllogism terminates: the former are called terms because of a similarity of the syllogistic discourse to continuous quantity. St. Albert thus explains this imposition: "...terminus in hac scientia metaphoricè dicitur a termino in quantitate... terminus in quantitate non est nisi principium, vel medium, vel finem... Cum ergo transferentes secundum aliquem similitudinem transita, non potest esse terminus in syllogistica scientia, nisi ut a quo est discursus syllogisticus, et hoc est major extremas: vel ad quod est discursus syllogisticus, et hoc est minor extremas quae ultimas sub medio accipiuntur: et ulterius post ea nihil est de discursu syllogistico nisi et medium per quod discurret ratio in discursu syllogistico" (In I Prior. Anal., Tract. II, ch. 2).

In the affirmative modes of the first figure the reason unites the subject and predicate of the conclusion through the principle dicti de omni, showing that the subject of the conclusion is contained under the universality of the predicate because contained under the universality of the middle, which is contained under that of the predicate. The middle in other words, is contained within the extension of one of the extremes, while containing the other within its own. ⁽¹⁾ In this is found the proper notion of middle term: it is middle not only because it unites the extremes, but its position with respect to universality is middle. ⁽²⁾ One of the extremes is greater (major) than the middle and contains it, and for this reason is called the major extremity; the other is less (minor) than the middle and contained within it, and is accordingly denominated the minor extremity. The fulfillment of this condition in each of the three terms is essential that the proper notions of major, minor, and middle be realized in them. ⁽³⁾ It is because they are fulfilled only in the major, middle and minor of the first figure that this figure alone is perfect. ⁽⁴⁾

(1) - "...medium est quod est inter extrema: quia aliud in discursu rationis sub alio accipitur, et aliud accipitur sub ipso" (Ibid.).

(2) - "Si quis considerat rationem perfecti medi in syllogismis, medium ex duobus est medium, quorum si alterum defuerit, non habet perfectam medii rationem. Duorum autem unum quod secundum ordinem praedicabilium in linea praedicamentali positione sit medium. Alterum autem quod sit unitivum et conjunctivum extremorum" (Ibid., ch. 6).

(3) - "Voco autem medium per metaphoram superius inductam, quod et ipsum in alio est ut major, et aliud in ipso est ut minus: contentum enim secundum ambitum praedicationis semper minus est quam continens, et totum est in continente: hoc enim in tali figura etiam positionis ordine fit medium, quia inter extrema secundum ambitum praedicationis constitutum. Extrema vero voco hoc quod et ipsum in alio et aliud in ipso est, hoc est, quorum unum est in alio contentum per praedicationis ambitum sicut minus extremum est in medio, et sicut major extremum in quo est medium secundum ambitum praedicationis" (Ibid., ch. 2).

(4) - "Major enim extremas ambitu suae communitatis extra

What is here of importance with respect to the notions of major, minor, and middle terms is the dependence of a knowledge of them on the notions of universality and of greater and lesser universality. Because of this dependence an understanding of the syllogism depends on a prior knowledge of the dispositions of the universals acquired from the Predicables and Predicaments.

Another part of the science of the syllogism in which the dependence of a knowledge of the syllogism on intentions known from the study of the first operation is manifest, is the part which deals with the discovery of the middle term. The rules here given presuppose a knowledge of the intentions according to which the universals are ordered and their application or use presupposes a knowledge of the predicamental order itself.⁽¹⁾

5. - The Predicamental order as Presupposed to Demonstration.

In the third chapter the disposition of the universals in their predicaments was considered as ordered to the simple apprehension of the essences of things, that is, to definition, or to the first part of St. Albert's division of logic into two parts. But this disposition is presupposed not only to the formulation of definitions, but also to the second part of St. Albert's division, which is argumentation.

medium est ; secundum substantiam autem et intellectum et definitionem est inter medium, et ad medium quasi continentia. Medium autem ad se terminat fluxum majoris extremitatis, et ex se dirigit in minorem ; et ideo naturalis positione in prima figura extremitas major terminus major est, et medium naturalis positione medium, et minor extremitas naturalis positione est terminus minor.

Propter quod perfecta est haec figura⁽¹⁾ (Ibid.).
(1) - See St. Albert, In I Prior. Anal., Tract. VI.

St. Thomas indicates this in a passage in his commentary on the Metaphysics : "...oportet sicut in demonstrationibus, ita in definitionibus esse praecognita ea, ex quibus definitiones fiunt, quae sunt universalis." ⁽¹⁾

Knowledge of the predicamental order is presupposed to demonstration because it is impossible to resolve without a knowledge of this order. The necessity of the principles in demonstration simpliciter, or demonstration through the cause (propter quid), must be evident in the principles themselves. But propositions can be necessary of themselves (per se) in either of two ways, that is, when either the predicate is of the definition of the subject (primus modus dicendi per se), or when the subject is of the definition of the predicate (secundus modus dicendi per se).⁽²⁾ Since the principles of resolutive reasoning must be such, the demonstrator must know the definitions of the subject and of the property he is demonstrating of it; for these he must know the predicamental order.

Moreover, in addition to knowledge of the predicamental order itself, familiarity with the entire art of definition is presupposed to demonstration. Definition of the property, for instance, supposes a knowledge of the mode of definition proper to accidents, particularly

- (1) - In I Metaphys., Lect. 17, n. 266. For passages where St. Albert speaks of the necessity of a knowledge of the predicamental order, see in I De Sophisticis Elenchis, Tract. I, ch. 1; De Praedicamentis, Tract. I, ch. 1; De Praedicabilibus, Tract. I, ch. 7.
In I Post. Anal., Lects. 10, 11. See also in V Metaphys., Lect. 19, n. 1054-55, and O.F.I.Vm, op. cit., pp. 49 ff.
- (2) -

(1) that they must be defined through their subjects. Similarly, the necessity of a knowledge of the art of definition follows from the consideration that in demonstrations it is the definition of the subject that is the middle term.
(2)

6. - Resume.

Once logic has been defined as the art that directs the reason in its advance from the known to the unknown, then it must be divided into its parts. The principle of this division should be found in what is already known about the object to be divided, that is, its definition. In the definition of logic given above, there is no indication of anything in the line of form and matter which is to serve as principle of the division. Rather, the principle can be found either in the word reason, where St. Thomas finds it, or in the word unknown, where St. Albert finds it. For St. Thomas, from the fact that there are three operations of the reason it follows directly that logic is to be divided into three parts. The explanation of this division is found in the consideration that logic is a science whose subject is second intentions; but second intentions are founded on the first and the natures of the first are determined by the natures of the operations; hence the second intentions are divided according to the operations. For St. Albert, there are two kinds of unknowns, the simple and the complex, the first

- (1) - In VII Metaphys., lect. 4, nn. 1335-1338; 1353.
In IX Metaphys., lect. 1, n. 1768.
- (2) - See In I Physicorum, lect. 1, n. 2. The reason for this is that in the principles of demonstration the predicate must be said of the subject univocally, or secundum quod ipsum subiectum est. See In I Post. Anal., lectiones 11, 12.

of which is known by the definition and the second by argumentation, which are two modes of knowing irreducible to one another, so that logic falls into two parts; of these the second is subdivided into the consideration of the enunciation and that of the syllogism. This division of St. Albert manifests the three works produced by, or instruments used by, the three operations of the reason in the speculative order; since the reason has need of the direction of logic for the proper formation of all three, these form the three subjects of logic.

The first operation is the simple apprehension, by which the reason simply grasps something of the object. The attainment of distinct apprehensions involves the use of two instruments: division, by which a distinct apprehension is attained of what was formerly known as a confused whole, by the distribution of that whole into its parts, and definition quid rei, which is a kind of discourse which states what the object is. Of these the principal is the definition, both because it is in itself the means of knowing the essence of objects and because definition plays an essential role in the attainment of science through the demonstrative syllogism. Every definition is a kind of composition, and since the reason cannot compose the simple concepts in such a way as to manifest the essence without first having ordered them, this disposition is the first work of logic. It is effected in three steps. The first of these, which is the work of Porphyry's Predicables, is the determination of those intentions according to which the universals are ordered; the second, effected in the Predicaments of Aristotle, is the disposition of the universals according to these intentions.

The third is the work of that part of the science of division which teaches the division of genus into species. Then, the art of definition teaches how to form definitions themselves, provides the rules for real and for nominal definition, teaches how to define accidents, and whatever else must be known in respect to definitions. The disposition of the universals in their categories is an essential prerequisite not only for definition but also for demonstration. Since the second intentions governing definitions are all founded on what is represented by the simple apprehension, rather than on the form it assumes, there is, strictly speaking, no formal logic of the first operation.

The second operation is composition or division. Logic arrives at a knowledge of this operation by studying the instrument by which the speculative reason signifies its compositions or divisions, namely the enunciation. Although not in itself an instrument for the acquisition of new knowledge, the enunciation falls under the consideration of the logician because the reason can pass to new knowledge of the true only by forming argumentations from truths enunciated; hence it is essential that the scientist know how to enunciate the true (by the composition of a noun and a verb), and that he know the kinds of enunciation and its properties before syllogizing and before studying the syllogism. This part of logic is entirely formal.

The third operation is that which is called reason in the most proper sense of the word, namely the act by which from some truth known, the mind advances to knowledge of a truth previously unknown. The subject of the part of logic which treats of this operation is the syllogism, and this part is divided into a formal and a material part.

The formal part looks to the syllogistic form of reasoning (the simple ostensive syllogism), and then those forms reducible to the syllogism, principal among which is induction; the second, or material part, looks to the syllogistic form, first as it is found in necessary matter (the demonstrative syllogism), secondly, as it is in probable matter (the dialectical syllogism), and thirdly, as it is in matter which appears to be either dialectical or demonstrative, but is not (the sophistical syllogism). For a distinct knowledge of the whole of logic the second intentions pertaining to each of the three operations of the reason must be considered according to the natural order of the operations.

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(1) - The text of every logical work of St. Albert has been transcribed from the Borgnet edition, long out of print, and made available in mimeograph by Michel Doyon, 1215, Chemin Ste-Foy, Québec 6, Canada, (1950-1956).