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' . JWXJIO.

## CHAPTER ONE.

IETBOfiaaTIOI TO 10010.

### 1. OEDER OE PEOCEDUEB} This introduction to logic?

- A. Will treat?
  - a. Elrst. of the necessity of logic.
  - h. Secondly, of the nature of logic? regarding which will "be dealt with?
  - hi. In the first place, its character as science and as art;
  - h2. In the second place, its formal object.
  - c. Thirdly. the division of logic? concerning which will he expfsedt
  - cl. In the first place, certain preliminary notions;
  - o2. In the second place, the veiy division of logic.

B. Hence the following order:-

Its **necessity...Article** one.

Intro- duction to logicI		Its character as science and art.,.,.,.Article two*
	Its nature	Its formal <b>object.Article</b> three.
		Oertain preliminary notions.....Article four.
	Its division	The division <b>itself.Article</b> five.

article OITE.

NECESSITY OP IOCIC.

2. OONCIUSION? As will appear from the considerations exposed below (nn.3-5), it must be said that 10010 IS SIMPLY NBOESSAEY POE THE AOCJjJISITiatl OP SCIENCE IN ITS PEEPBOT STATE.

3. NATUEAI IOOIO AND AETIPIOIOUS OR ACqUIEED IOOIO? The distinction between natural logic on the one hand, and artificial or acquired logic on the other, is manifest from the folloxving?

A. Every man, according as he has the natural power of reasoning, is endowed with a ceiiialn NAIDEAL logic, whereby ho is capable of accomplisif-in^ reasonings necessary for his daily life, Of this, it is not questloii here.

B. But it is question here of AETIPIOIOUS logic?

- a. Which Isa quality?
  - a1, superadded to the intellect,
  - a2. end acquired by study;
- b. Whereby is perfected the natural logic vM^ch every(me having reason naturally enjoys.

4. EEBCEIPTION OP AETIPIOIOUS LOGIC; This is described by St Thomas?  
THE ART DIEECTIYB OP REASON ITSELF, THAT IS, WICE ENABIES MAN TO PROCEED IN THE VERY ACT OP REASON ORDINATEt/Y, EASIIY AND WITHOUT ERROR.  
(In Anal, Post,, lib.1, loot,1, n,1).



5» OS' iiHi'IFICIOiJS LOOI0j ffhis ig neossssjcTt Tiot oiljr for  
 til© eagg; aociuisitich of soisnce in its perfect "but for the v«iT  
 aoquieitioe of sei«ise -La. t./:,t ^

A. St Is not therefore to be denied that natural ioi^ic- suffices for the  
 sequieitron of aoae iaperfact rudlmeutg of science.,-

V4. It mst be said tixat this natural logic is not .sufficient for  
 oDtainlng perfect eolsnce?

a. Therefore it is to be said that artifloisl logic is sinttily neocesaw.  
 o. in such fashion that, in default of it. thm of  
 perfect science is quite Inpcsslble.

C« For the possession of perfect scierico is achlev6d\_l1r^BIRaid of a  
 oe«wain quality acquired hF study, a quality vshoreby the"Intellect is  
 r^4®\*^®d oapaue of r@a,soaiag perfectly in some determinate scientific  
 laatter,

a. foT tts naturaJ-j very imperfect, power of .reasoning of the intellect  
 is not sufficient for perfect scientific reasoning.

b. But our intellect cajinot obtain this perfection vrlth re^rd to a  
 specisl ffiatter, unless it be periously perfected vrlth regard to scientific  
 In g^^ral § t.rig parfactloxi is o'btaitiod tho stxidy of  
 artificial logic. \*

bl.^ .^or evuT intellect is not naturally capable of 'scieatlmo reasoning,  
 as snows, fully in natural, philoTop^ Tin pgycholot^yT? the^fore it csist  
 acquire this capability.

b2. Shen again, reasoning in a detersRiaatc; «;cior^tific asvtter d<tpeads on  
 gQ^ral node of reasoning perfectly,

AFlll-OrJ WO.

AS soimcz md AHg.

6, OObCnJsiuHj As will appear from the consideration eaposed here-under  
 - => W's it be gfidci that L0d-XC IE A fflaCIILAfflira. Aim  
 A\_LIB1SAL ABT 3111' IliPE0?!gBiT\*SQ^c3ihfEI)11^Pf>i^^

7, SHEOULATIfl SCISTCI; Logic, whereby is acculred the quality of  
 ^ reasoning perfectly, is constituted throu^ teo^edge of the causes  
 throS^o^ses it is trvily a scionce, that is, teTowlea^

A. lor Is it anj'- a'bst-aole to this.\*

a.,Shat describing logic (cf. n.4), says-tlint it le an art.  
 0. Jon, ae otjinogas hlffiself says• «fhis art.....i s a rational"^^

S. ABSs Herertholess,' lc^:io ie together an art, to wit, a quality  
 .. towards ^ to be producodf for art ie »»\*4ght reason about  
 -.akeables recta ratio factlMilum'\*. .

^!«?ledg8 of the theory of reasoning is ordered towards the  
 S^iag or perfect roaeoaiage.

Pi'odacM is purely tntomal. and is nothing dse tkm  
 IU© worK of speculaviffl itself.

^ ^ IHISOniKLT SO-GliiJS)? for of art properly  
 Mim., such as a bridge, or a statue, or a piSuS,  
 02 an ^gkne, or an orarioa, or a fam. r- i

0. MorsoTor, 3.ogie cc-oli not b© togothen %iA' ; ' ./a-

"bl. A speculative science, that is» a science whereof the end is internal (knowledge itself),  
 hS. And an art properly so-called, whereof the work is external.

AP-TIAE THREE.

EOBHAL OBJECT OF LOGIC.

9- CONCLUSION! As will be evident from the consideration set forth hereunder (nn.10-12), it must be said that THE FORMAL OBJECT OF LOGIC IS MENTAL BEING OF SECOND INTENTION (ens rationis secundae intentionis).

10. THE FORMAL OBJECT OF LOGIC IS A MENTAL RELATION! No one denies that logic deals with mental relations, that is, relations which can exist in intellect only, between Predicate and Subject, and between the diverse propositions of reasoning. But the question is: Whether the primary and essential reference of logic is to these relations?

A. For since logic is the art directive of reason itself to the attainment of the true, the question formally concerns the artificial order necessary to attain the true, to wit:

a. Whether this order consists in the acts of the mind inasmuch as they are directible; or, in other words, in something real?

b. Or whether this order consists in the very ordination of concepts by way of subject and predicate, and of middle term; or, in other words, in some mental relation?

B. Against Suarez, who holds the former opinion, to wit, that the object of logic is the objects as directible, or in other words, real being, it must be said, with St Thomas and Thomists, that the formal object of logic is the MENTAL RELATION (relatio rationis) resulting from the ordering of concepts by way of subject and predicate and middle term.

a. For:

al. The formal object of logic must be that which suffices to direct reason to the true.

But by the sole ordering of concepts by way of subject and predicate and middle term - which ordering is a mental relation - is reason sufficiently directed to the attainment of the true,

b. Moreover;

bl. There is in the opposite opinion a danger of confusing the formal object of logic and of criticism;

b2. And perhaps in this is found the reason why often the Suarezians understand, under the name of Major Logic, the Criticism of knowledge, allocating the treatment of the criticism problem, not to metaphysics, but to logic. (Cf. Defensive Metaphysics, nn.5-13).

11, THIS RELATION IS A MENTAL BEING, AND OF SECOND INTENTION; But the reason why these mental relations by way of subject and predicate and middle term are said to be MENTAL BEINGS (entia rationis), is sufficiently evident, since they cannot exist save in mind.

A. For:

a. Being which exists or can exist in the nature of things, or in the real, is called REAL being.

b. But being which neither exists nor can exist outside mind is called MENTAL being (ens rationis).

B. However, the mental being, whereof it is question in logic, has this proper character, that it is not, obtained even by a second intention (consideration) of the mind. If, for example, I say 'Peter is a man'!

4.

a. The first intention, of the mind is bemo both upon ttae indiTiftoal whose name is P<sup>^</sup>ter, and upon the rational animal which is designated by the word \*man',

b. But that \*man' is considered as predicate, that is as related to 'Peter', or vice versa, this occurs only by a ceitain reflexion, or, in other words, by a SBOOHD INTEdITION.

12, ESSENTIAL HEEINITIOH OF LOGrLO; Hence, logic can be defined essentially\*

A. Either from its adequate formal objectf THE SPECULATIVE SOIEHCE OF MffITAL BEIHC OF SEOQHD flS<sup>^</sup>TMTIOH.

B. Or from its object of attribution; THE SPECULATIVE SCIENCE OF BEA\_SOITINC. (Note that the object of attribution of a science is that whereunto everything which is treated in a given science is attributed or ordoredj as foy example, movable body in natural philosophy, and substance in metaphysics).

0, Or from it© principal object; THE SPECULATIVE SOIENCS OF IEMONSTBATION. (Note that the principal object of a scienoo is that which is more principally and principally intended by a given science, so that everything which is treated in that science is treated intentionally on account of it; as for example, Pure Act in metaphysics). (Cf, Pirottaj Summa Philosophiae, Vol.I, p.146).

#### ARTICLE FOUR.

##### CERTAIN PRELIMINARY NOTIONS.

13. REASON: The reason is a cognoscitivo, power, but not indeed a power other than the in'telligence (understanding, intellect), "But from the point of view of the functioning of tills faculty:

A. "It ip called more especially the Intelligence when it sees, grasps, or 'apprehends';

B, "And more especially the reason vihen it proceeds through discourse from the apprehension of one thing known to anothor." (Maintain: Intro-\* duction to Logic, p.1).

0. "What act is proper to the reason as such? EEASCNINC," (Marltain\* ibid.).

14» REASONINC; "We reason when we think for instance\*

"The spiritual Is Incorruptible,  
but the human soul is spiritual,  
therefore it Is Incorruptible.

A. "Reasoning is the most complex operation of our mind; it is by reasoning that we go from what wo know already to what wo do not yet know, that we discover, that we demonstrate, that wo make progress in knowledge.

B. "Since logic studies the reason a,s a means of ac(iuirIng knowledge:

a. "It must consider first and foremost among the operations of the mind, reasoning.

b. "There are other operations of the mind which logic must also consider.

c. "It will consider them in relation to reasoning, as factors i» it.

0. "The act of reason is one or undivided, Ilko the act of taking three steps towards a goal. One, two, three, we have reached the goal: we have taken three steps, but wo moved without stopping, i«lth an undivided movement.

- a, "We reason likewise with the unclividad movement;
- h. "But we do not reason for the mere pleasure of running, or •discursing\* from idea to idea, but indeed to conclude, to render evident to ourselves some truth in which we stop.
- c. "Yet the act of reason is a complex act; it is one or undivided, but it is not simple or indivisible; on the contrary it is composed of several distinct acts in orderly sequence, each of which bears upon an enunciation similar to the three enunciations in the example given above and which we call propositions.
- d. "Each of these acts taken in itself is called a JUDGMENT." (Maritain; op.cit, pp.1-2).

15. JUDGMENT: "This is another operation of the mind which is anterior to the reasoning and is presupposed by it.

A. "To Judge is to affirm or to deny; it is to think for example,

"Caution is the mother of safety,

or again,

"Formal dress is not a considerable nuisance.

B. "In the first Judgment we affirm of the term 'caution' this other term 'mother of safety', that is, we identify these two terms saying; there exists one same thing (a same subject) to which both the name 'caution' and the name 'mother of safety' belong at the same time. In the second Judgment we deny to the term 'formal dress', this other term 'considerable nuisance'.

O. "By Judging we declare ourselves to be in possession of the truth on this or that point. A wise man is one who Judges well.

D. "The act of judging;

a, "Is one or undivided, as the act of taking a step; it is even, strictly speaking, a simple or indivisible act. Thus, in the example given above, the Judgment does not consist in the juxtaposition of three different acts of thought – an act of thought for 'caution', another for 'is' and a third for 'mother of safety', but indeed in a single act of thought.

b, "It bears nevertheless upon a complex object (a proposition constructed by the mind),

b1. "And Just as a step is a movement between two terms, between a point of departure and a point of arrival,

b2, "So the act of judging is a movement of thought, translated by the word 'is', which unites two different notions, expressed by;

b2a. "the word-subject,

b2b. "and the word-attribute or predicate.

c, "Each of these notions corresponds to a certain act of the mind called conception, perception, or SIMPLE APPREHENSION." (Maritain; op.cit. pp.2-3).

16. SIMPLE APPREHENSION: "This is another operation of the mind, anterior to Judgment and presupposed by it.

A. "To conceive is to form in the mind an idea in which one sees, grasps, or 'apprehends' something. It is to think, e.g.

" 'man'  
or 'caution'  
or 'unfortunate'.

B. "This act is evidently at the very root of all our intellectual knowledge, and that is why it is of the first importance. For by this act an object of thought is offered to the sight or grasp of our intelligence.

a, "This act of perception or apprehension is, however, so imperfect that although it does indeed present to us an object of thought discernible

in a thing, it; -does not e\* tha same time pro\*attt vur-thm otJaer of thought Ttfhioh are united to this one in the thing as it exists (its existence being either actual or possible),

al.. "Ooneequently oixr mind, reaaaijaing in a state of suep<at>e, has nothing as yet to affirm or deny. It is clear for example that if vb tfeijak:

" \*man'  
'snow'  
'delicate people'

we have but the beginning of a truth in our mind, our mind makes as yet no declaration of conformity v.dth the real; this declaration is not made, nor is there a completed truth in our mind, unless vre think for example (in a judgment);

"man is mortal'  
or 'snow is white'  
or 'delicate people are unfortunate'

or the like.

a2. "In -the same way we do not advance by simply lifting our foot off the ground, we advance only if wo take a step,

b. "We may say then that in making an act of simple apprehension our mind merely grasps a thing without affirming or denying anything about it.

C. "This act:

a. "Is not only one or undivided, but also simple or indivisible; the act of thinking 'man' or 'snov/' is obviously an act which at3mits of no parts.

b. "Furthermore it bears upon an object:

b1, "which is either indivisible itself (as an object of thought, e.g. 'man'),

b2. "or at least is apprehended in the same way as indivisible objects, that is, without involving any construction erected by the mind.

c. "Hence it is called an act of simple apprehension.

D. "The act of conception or simple apprehension is thus a primary operation which presupposes no other intellectua,! operation.

a. "Undoubtedly it does not constitute our first act of knowledge (for it presupposes the operations of the senses),

b. "But it constitutes our first IITT3LLS0TUAL operation, it is the first operation of the mind." (Maritain; op.clt. pi).3-4T"

17. THEHE OPERATIONS; "The three operations of the human mind are:

A. "Simple apprehension.

B. "Judgment.

0. "And reasoning." (Maritain; op.cit. p.4).

IS. "TEE OPSEATION OF THE MIND AND ITS PRODUCTS: The study of the operations of the mind and of their inmost mechanism belongs to psychology.

A. "But we may note here the distinction botv/eon;

a. "The operation itself or act of the mind,

b. "And the product which the mind produces thereby within itself. /

3. "The act:

a. "Of judging, for example;

a1. "is an operation of the mind involving the production or construction in the mind of a certain group of concepts,

a2, "which we call an enunciation or proposition.

b. "There;

b1. "is as much difference between:

b1a. "the action of assembling concepts and judging,

b1b, "and the constructed group itself,

b2. "as there is between;

b2a. "the action of building a house,

b2b, "and the house when built.

0. "The verbal proposition which explains **it** in words and is **its** oral sign. There is as much difference between the one and the other as between the house **itself** and some representation of **it**."

a. "By verbal propositions we understand:

a1. "those that are actually spoken - groups of words spoken aloud

a2. "as well as those which are spoken only in the mind - groups of words formed in the Imagination.

h. "When we think, for example, 'man is mortal':

h1. "We affirm that which is presented to us by the idea of mortal, of that which is presented by the idea of man.

b2. "But at the same time in which we form this proposition in the mind, we imagine the verbal proposition by which **it** is expressed (and sometimes we really form its phonetic equivalents with our lips).

c. "The thought-proposition (the group of concepts) evidently:

c1. "differs as much from the mentally-spoken proposition (the group of auditory or muscular images of articulate sounds),

c2. "as **it** does from the actually-spoken proposition.

D. "To make more precise the meaning of the **terms**, we may construct the following table of the operations of the mind:

"THE OPERATIONS OF THE MIND AND ITS RESULTS"

I THE OPERATION

THE PRODUCT

THE SIGN

I. Determined by a likeness of the object received through the senses - by means of abstraction - the mind forms

or 'says' within **itself**, an idea (or MENTAL CONCEPT) in which

it sees, grasps or apprehends (SIMPLE APPREHENSION) a certain essence or object of a concept (which logicians also call an OBJECTIVE **CONCEPT**), ... and

it designates this idea by a word (TERM) which is itself signifiable by a graphic sign (a written word): man.

Having thus seen or apprehended, the mind may now produce within

**itself**, a complex concept relating in detail what it has seen.

This is the DEFINITION OF THE THING, .. of which the oral sign

is a verbal DEFINITION (a group of words): rational animal.

II. The mind constructs

(COMPOSITION AND **DIVISION**). a group of two concepts (Subject and Predicate) whose

agreement or disagreement it apprehends and to which it affirms or denies one of the other by a simple act (a JUDGMENT) bearing

**upon... this** group of concepts or PROPOSITION.

This **has for** its oral sign a spoken PROPOSITION (a group of words): man is a rational, animal.

III. Eft Eibd «ees oT  
 ^)pr-ekend6..

a grouping of  
 propositions  
 (antecedent)

as 'inferring' or rendering  
 necessarily **true**.

another proposition  
 (consequent)

which it 'concludes\* from the  
 preceding propositions. Thin  
 is the EEA-SOHillO which con-

**structs**.

a group of proposi-  
 tions celled AEQU-

^^MTATIOII, whose... ..oral sign is the rerhal  
 ABQUMEI^ATI OIT (group  
 of spoken propositions):  
 man is a rational animal?  
 hut every philosopher is  
 a man; therefore every  
 I^ilosopher is a rational  
 animalT

- a. "In:
- al, "The first column we haye written that which concerns the acts or  
 operations of the mind;
- a2. \*\*Yn the second that which conceme tha products that are formed in  
 the mind;
- a3i "And in the third the oral and material signs of thege mental  
 products.

- h. "Everyday language ordinarily confuses these throe orders of things;
- hi. "hecause in many cases what is said of the product may also he said  
 of the operation;
- h2. "and hecaueo it is natural for man to call things which ere  
 signified by the same name hy their sign only, for this is more familiar  
 to him.

- c. "Nevertheless, to take examples;
- c1. "A judgment is a vital act;
- c2, "A (thought) proposition is an immaterial organism composed of  
 several, concepts;
- c3. "A verhai proposition is an inert composite of material parts  
 (words) in juxtaposition in time (oral proposition) or in space (written  
 proposition).

- d. "These distinctions are highly important if logic is to he ri^tly  
 understood.

- dl. "Lolhnitz and certain logicians in his tradition tend to  
 neglect the operation for the product, and the immaterial product of the  
 mind for its material sign.

- d2. "On the other liand, in its critique of the intellect, the Anti-  
 Intellectualist school (Janes, Bergson, Le Roy), often confuse the  
 operations and products of the intelligence with the materiel signs hy  
 v;hich they are expressed,

- d3. "No one has anyx/hore made clearer the distinction between the  
 thou/^t and the material signs which express it than Aristotle. The  
 object of Ms logic;

- d3a. "is precisely the immaterial psxoducts of the mind,
- d3h. "and not the spoken or x\rritten words, wMoh he treats only  
 insofar as they arc external signs of these products." (Maritain;  
 Introduction to Logic, pp.4»\*8).

# ARTICLE FIVE.

## DIVISION OF LOGIC.

19\* ACCIDENTAL DIVISION: Very frequently found In authors:

A. Is the division of logic into:

- a. EOBMAL logic or the art of reasoning ordinatdLy and easily;
- h. MATERIAL logic or the art of reasoning xcithout error.

B. But we leave this division aside;

a. Because it follows the description of logic, not its essential definition.

h. Because it is accidental.

20. ISSEINTIAL DIVISION: On the contrary the division from formal oh.ject is to he taken, ^lich is ESSENTIAL. Therefore logic is divided according to the division of mental being of the second intention, aacor^ng as it is foiond in the three operations of the mind, to v/it, in the first and second through reference to the third.

A. In the first operation: predicahllity.

B. In the second operation; predication.

C. In the third operation: illation or inference.

21. PARTS OF LOGIC, AND OEDEH OF PROCEDUEB; Hence;

A. Three parts of logic, to wit:

- a. The first part: ON RREDICABILITY.
- h. The second part: ON PREDICI'tION.
- c. The third part: ON ILIATION OR INFERENCE.

B. Hence the treatise of logic ivill proceed according to the following order

First part: ON PREDICABILITY

.Book one.

Logic Second part: ON PREDICATION..

•Book two^

Third part: ON ILLATION.

Book three.



BOOK ONE.

FIRST PART OF LOGIC: OF PREDICABILITY.

22, OVERALL VIEW OF THIS PARTS    This first part of logic:

A. Will be disposed in four sections, to wit;

a. FIRST SECTION; Treats of the study of predicability; wherein will be dealt with;

    First, simple apprehension, which is the CAUSE of predicability.

    Secondly, the concept, which is the WORK of apprehension; which will be considered;

    a2a. In the first place, in ITSELF.

    a2b. In the second place, in its SIGN.

h. SECOND SECTION; On predicability in general; wherein will be dealt with;

    nature of the universal in ITSELF.

    b2. Secondly, the universal relatively to its INFERIORS.

c. THIRD SECTION; On predicability in special; wherein will be dealt with;

c1. First, UNIVOCAL predicability; concerning which will be treated;

    In the first place, univocal predicability in signified act or the PREDICABLES.

    c1\*\* In the second place, univocal predicability in exercised act or the PREDICAMENTS.

c2. Secondly, ANALOGICAL predicability.

d. FOURTH SECTION; On the effect of predicability or definition.

B. Which may be thus exhibited schematically;-

			Notion of apprehension
	Or simple apprehension,		r
	which is the CAUSE of		
	predicability:		
Pi'e-arables to the		On abstraction.	
litudy of predica-			
bility; (FIRST		Its nature.	
section)		IN ITSELF	
	On the poncept, which	Its division.	
	is the WORK of appre-		
	hension and whereof		
	predicability is a		
	property, considered		
		In its SICSVT.	
On predi-			
cability:			
	On the universal in ITSELF.		
	^n GENERAL:		
	(second		
	section)		
	On the 'Universal relatively to		
	its HTFERIORS.		
	In	On univocal predica-	
	itself	bility in signified	
		a£,t or on the	
		PREDICABLES.	
		On UNIVOCAL	
an.sjce.di]		predicabilitV	
cability	IN SPECIAL:	On Univocal predica-	
	(THIRD	bility in exercised	
	SECTION)	aej; or on the	
		PRSDICA£ENTS.	
		On jAfJALOCOUS predicability.	
	bn its sign or on DEFINITION (FOURTH SECTION).		

SECTION ONE.

PRE-AJffILES TO THE STUDY OP PREDICABILITY.

23. ORDER OP PROCEDURE: What this ejqjosition of the pre-ambles to the study of predicability will embrace is sufficiently known from what has been exposed above (n.22). Accordingly it will proceed to the following order:-

On simple apprehension, which is  
the CAUSE of **predicability**..... Chapter three.

Pre-amibles to  
the study of  
predicability:

In ITSELF...

Chapter three.

On the concept, which  
IS the WORK of apprehension and whereof  
predicability is a  
property, considered

—

In its SIGN,

Chapter four.

## CHAPTER TWO.

SIMPLE APPREHENSION WHICH IS THE CAUSE OF PREDICABILITY.

24. ORDER OF PROCEDURE: This consideration of simple apprehension:

A. **Will:**

§- First, expose the notion of simple apprehension.

Secondly, expose by what means the intellect apprehends essences.

B. Hence the following order:-

Simple apprehension  
which is the cause  
of predicability:

Its notion,

Article one.

By what acts does the intellect  
apprehend **essences**..... Article two.

## ARTICLE ONE.

### NOTION OF SIMPLE APPREHENSION.

25. DEFINITION OF SIMPLE APPREHENSION: The **first** operation of the mind, very imperfect indeed and of **its** own nature (per se) ordered towards judgment, is called SIMPLE APPREHENSION.

A. To psychology does it pertain to vindicate the EXISTENCE of this operation, against the denial of many moderns outside the scholastic tradition.

B. It is THE OPERATION BY WHICH THE INTELLECT UNDERSTANDS SOME QUIDDITY, WITHOUT AFFIRMING OR DENYING ANYTHING OF IT.

C. The OBJECT of this operation is a quiddity, ESSENCE, that which something is.

a. Wherefrom:

a1. It is immediately apparent that this definition cannot be accepted save by those who admit that the human intellect knows essences - which likewise is proved in psychology.

a2. Let it suffice for the present to retain this, that common sense (natural understanding) approves this definition: if, for example, I say 'man' or 'dog', these words which express objects of simple apprehension, signify, for common sense, THAT TO WHICH MAN OR DOG IS, and so on.

b. Thus Maritain writes: "THE IDEAL OBJECT of simple apprehension is always SOME ESSENCE, NATURE OR 'QUIDDITY'. Here we may take the words 'essence', 'nature', and 'quiddity' in their broadest sense as meaning what something is (some object which I attain in pronouncing a name), or again what this idea or this name sets before me. I grasp a certain essence, in this sense, whenever I think - e. g. 'living body', 'animal', 'French', 'peter'. Thus everything grasped by means of simple apprehension is, as such, ONE essence." (introduction to Logic, pp.12-13).

c. Lest what is said here be misunderstood, note the following words Maritain; "Certain modern authors have misunderstood this term 'the apprehension of essences' to mean that, by the power of abstraction, the mind may at once perceive the inmost constitution of a thing. The scholastics never held any such doctrine. For them, abstraction transports us from the sensible to the intelligible plane, and introduces us into the order of essences and their necessary laws. But the intelligible objects, the 'natures' or 'essences' perceived in simple apprehension, far from putting us in possession of the innermost constitution of things are, at first, but the simplest and most intelligible aspects, which are grasped in the things themselves (first of all and at the very outset, 'being' as an object of thought). Thus the concept of 'fire' which I derive from sense experience does not unfold to me the innermost nature and mysteries of 'ignition'; at first it is simply a concept of something with a determinate nature (as yet unknown to me) which appears under certain sensible aspects. Only later do I penetrate this nature and know it as the combination of a body in its gaseous state with the oxygen of the air. Undoubtedly it was this very thing that the concept of fire revealed to me, but in a hidden way.

- And even if we do succeed in attaining an explicit knowledge of the essences or the inmost constitutions of some few things, nevertheless, in a great many cases (especially in the inductive sciences) we have to be content with imperfect knowledge through external signs." (introduction to Logic, p.13, note 2).

D. Absence of affirmation and of negation which are the specific differences of judgment, is essential to simple apprehension.

26. **SIMPLE APPREHENSION AS THE "UNDERSTANDING OF INDIVISIBLES"**: Simple apprehension is called also the understanding of indivisibles "inasmuch as the intellect understands absolutely the quiddity of each thing, or an essence through itself, for example, what is man, or what is white, or something of that kind." (Periherm., lib.1, lect. 3. S.Thomae, n.3: cf. Metaphys. VI, lect. S. Thomas, n.1232, ed. Cathala. ).

A. Note that the second of the examples given, viz. 'white' or 'a white thing' signifies a complex essence, i.e. an essence composed of two quiddities:

- a. a certain thing, e.g. snow;
- b. and whiteness which is a property of the snow.

B. However there is no difficulty in the name "understanding of indivisibles", for:

- a. Although in these cases its object is divisible,
- b. Yet, since it is apprehended by way of a one.
- c. It is known afterwards in the manner of an indivisible.

## ARTICLE TWO

### BY WHAT ACTS IS SIMPLE APPREHENSION EXERCISED?

27. **CONCLUSION**: As will appear from what is said hereunder (nn.28-30), it is to be said that THE INTELLECT UNDERSTANDS ESSENCES ABSOLUTELY BY MEANS OF ABSTRACTION, RELATIVELY BY MEANS OF COMPARATIVE APPREHENSION.

28. **ESSENCES APPREHENDED IN TWO WAYS**: In two ways does the intellect apprehend essences:

A. Both ABSOLUTELY in themselves;

B. And RELATIVELY, insofar as these essences are considered as referable to other objects. This latter apprehension, like the former, pertains to the first operation of the mind, as is shown fully in psychology.

29. **ABSTRACTION AND COMPARISON:** Yet these acts, though they both pertain to the first apprehension of the mind, are diversely named:

A. ABSTRACTION bespeaks THE ACT OF SINGLE UNDERSTANDING WHICH CONSIDERS A THING ACCORDING TO ITSELF, ABSTRACTED FROM ALL RELATION TO ANOTHER. And abstraction indeed is twofold:

a. FORMAL abstraction, WHEREBY SOME QUIDDITY IS ABSTRACTED FROM ITS SUBJECT, as for example:

a1. Whiteness, which is abstracted from snow;

a2. Hardness, which is abstracted from steel;

a3. Quantity, which is abstracted from sensible matter. (Cf. Cajetani In De Ente et Essentia, ed. Laurent, pp.6-7).

b. TOTAL abstraction, WHEREBY SOME SUPERIOR UNIVERSAL - i.e. some universal having greater extension - IS ABSTRACTED FROM ANOTHER INFERIOR UNIVERSAL — i.e. a universal having less extension - : e.g. animal - a universal which is superior relatively to horse and lion, - which abstracted from horse and from lion.

B. COMPARISON, on the contrary, is THE ACT OF SINGLE UNDERSTANDING WHEREBY IS APPREHENDED A THING AS RESPECTING OTHERS TO WHICH IT IS ORDERED.

30. **NATURE KNOWN BY ABSTRACTION, AND NATURE APPREHENDED BY COMPARISON:**

Therefore a nature, known by abstraction, differs from a nature apprehended by comparison.

A. For a nature known by abstraction respects inferiors (i.e. universals having less extension) as a term WHEREFROM it is abstracted, and it is called, as we shall see below, a metaphysical universal.

B. But a nature apprehended by comparison is referred to inferiors as orderable towards them (i.e. it is referred to them as to a term WHEREUNTO), and it is called a logical universal, as will be explained below.

#### SCHEMATIC SUMMARY.

31. **SCHEMATIC RECAPITULATION:** What has been said in the foregoing chapter may be thus schematically summarized:-

It is defined: THE ACT WHEREBY THE INTELLECT  
UNDERSTANDS SOME QUIDDITY, WITHOUT AFFIRMING OR  
DENYING ANYTHING OF IT.

ITS  
NOTION

Hence

Its object is: a quiddity, ESSENCE, what some-  
thing is.

Absence of affirmation and negation is essential  
to it.

Which is: AN ACT OF SIMPLE UNDERSTANDING WHICH CONSIDERS A THING ACCORDING  
TO ITSELF, ABSTRACTED FROM ALL RELATION  
TO ANOTHER.

On simple  
apprehension:

And which  
[ABSTRACTION] is twofold,  
to wit:

Either PARTIAL, WHEREBY SOME  
QUIDDITY IS ABSTRACTED FROM  
ITS SUBJECT.

Or TOTAL, WHEREBY SOME SUPER-  
IOR UNIVERSAL IS ABSTRACTED FROM  
ALL OTHER INFERIOR  
UNIVERSAL.

THE ACTS  
WHEREBY  
IT IS  
EXERCISED  
are:

And whereby  
is obtained

a universal respecting its  
inferiors as a term WHERE-  
FROM it is abstracted,  
Which universal is called  
a metaphysical universal.

much is: AN ACT OF SIMPLE UNDERSTANDING  
WHEREBY IS APPREHENDED A NATURE AS  
RESPECTING OTHERS TO WHICH IT IS ORDERED.

COMPARISON

is a universal -which is ordered  
to its inferiors as a term  
And whereby it is orderable.  
is obtained

Which universal is called  
a logical universal.

CHAPTER THREE.

THE CONCEPT, WHICH IS THE WORK OF APPREHENSION, IN ITSELF.

32. ORDER OF PROCEDURE: This consideration of the concept, which is the work achieved or produced by simple apprehension;
- A. Will consider:

First, the concept in itself. Concerning which will be treated:

al. In the first place, the nature of the concept: regarding which will be exposed:

ala. The notion of the formal and objective concept.

alb. And then, by what is determined the nature of the concept: with respect to which:

albl. Will be exposed the elements of the concept.

alb2. Will be established the determination of the nature of the concept by its comprehension.

- a2. In the second place, the divisions of the concept,
- b. Secondly, the concept in its relations with other concepts.

B. Hence the following order of procedure

	iNotion of the formal and [objective concept.....	Article one.
Its iNature	Elements of the <b>concept</b> .	Article two.
[Determination of the nature of the concept	(Determination of its nature by its comprehension....	Article three.
In itself		
On the concept	Its divisions	Article four.
	In its relations with other concepts^	Article five. *

#### ARTICLE ONE.

#### FORMAL AND OBJECTIVE CONCEPT.

33. NECESSITY OF ABSTRACTION: The nature (or quiddity), which is the object of simple apprehension;

A. Is not the external thing in its singular existence, which, as material, is not proportionate to our intellect, as is shown in psychology.

B. And so the nature is not apprehended immediately unless abstracted from the singular.

34. THE FORMAL CONCEPT: This abstractive apprehension requires that it have a term which, since in the real are found only singular things, has to be produced by the very act of knowledge, - which production is treated in psychology. This term is the WORK of apprehension - which is the CONCEPT.

A. However, this term produced by knowledge is not that which is known, but is that wherein we understand immediately the very nature of the external thing, abstracted from its singular existence, as common sense itself testifies:

- a. For not the same is it;
  - a1. to know man;
  - a2. and to know the idea of man.
- b. Even further:
  - b1. I know:
    - b1a. what is, according to the truth of the thing, man,
    - b1b. before the idea of man;
  - b2. Or, in other words, I know;
    - b2a. man as he is in the real,
    - b2b. before man as he is in my mind.

B. This term, "EXPRESSED BY THE MIND AND IN THE MIND, WHEREIN (PERMANENT) THE THING '(nature)" is called the FORMAL, CONCEPT or MENTAL CONCEPT. In the formal concept are to be distinguished these two;

- a. Some essence, which is IDENTICAL with the essence of some external thing.
- b. The existence which this essence has in the mind:
  - b1. which differs from the singular existence which the thing has in the real;

"62. by virtue of which difference the formal concept, i.e. the essence as it exists in the mind, is different, not identical with, the essence as it exists in the real.

35. THE OBJECTIVE CONCEPT: But the essence of the formal concept, abstracted from its mental existence;

A. Is the object of apprehension.

B. And is called the OBJECTIVE CONCEPT, which accordingly is: THAT WHICH WE KNOW OF OBJECTIVELY.

C. Whereas:

- a. The consideration of the formal concept pertains rather to psychology;
- b. The objective concept chiefly is dealt with in logic.

36. EVERY ESSENCE CAN BE AN OBJECTIVE CONCEPT: Every essence (nature, quiddity) can be an object of apprehension or an objective concept;

A. Whether it be a real essence, which:

- a. Exists (actual essence) in THE REAL,
- b. Or can exist (POSSIBLE essence) in THE REAL.

B. Or an essence of reason (essence of mental being), which exists (ACTUAL essence) or can exist (POSSIBLE essence) in the MIND only. Of mental beings (entia rationis) there are three species:

a. Privations; v.g. blindness;

b. Logical mental beings (entia rationis logicae): v.g. affirmation, species, genus (relations of rational mental relations).

c. Mathematical mental beings (entia rationis mathematicae): v.g. irrational number (a surd).

37. SCHEMATIC The contents of this article may be thus schematically recapitulated\*\*



Since it is abstractive.

[i.e.] is the Formal Concept.

ON THE FORMAL CONCEPT: Our apprehension: is not that which is known. Which

But is that wherein we understand immediately the thing (the nature).

Must produce a thing: If which is defined: THE TERM "EXPRESSED BY THE MIND AND IN THE MIND WHEREIN WE UNDERSTAND THE THING" (the nature).

Some essence which is IDENTICAL with the essence of some external thing.

In which are to be distinguished: Which differs from the singular existence which the thing has in the real.

On the formal and objective concept: The existence which this essence has in the mind In virtue of which difference the formal concept is SIMILAR TO, not identical with, the essence as it exists in the real.

Abstracted from its mental existence.

Is the essence of the formal concept. And IDENTICAL with the essence of the external thing.

And so is the object of apprehension or of the formal concept: Not indeed the material object thereof, But its formal object.

ON THE OBJECTIVE CONCEPT: And is defined: THAT OF SOME THING WHICH IS BY ITSELF OF THE FORMAL CONCEPT; or: THE OBJECT KNOWN INASMUCH AS IT IS AN OBJECT.

Whether real, and then: Whether ACTUAL. Or POSSIBLE.

And can be verified in every essence: Or mental (whether ACTUAL or POSSIBLE): Or logical mental being. Or mathematical mental being.

## ARTICLE TWO.

## THE COMPREHENSION AND EXTENSION OF A CONCEPT.

38. EXPLANATION OF COMPREHENSION; Since the objective concept is identified with the essence of the external thing, of itself it is indivisible.

A. Nevertheless, our knowledge does not penetrate, by a single act, the essence of a thing, so as to know it at once distinctly, but only gradually and after several or many acts.

B. In each act, the intellect forms a formal concept by the essence whereof is obtained a certain objective concept.

C. The complex of these objective concepts, whereby is expressed more or less distinctly the nature of some thing, is called the comprehension of the objective concept.

39. DEFINITION OF COMPREHENSION; Therefore comprehension is defined: THE COMPLEX OF THE NOTES WHICH CONSTITUTE A CONCEPT. Thus, for example the comprehension of the concept of man is: substance, composite, living, endowed with Sensibility, rational.

A. NOTE however. Lest this notion be falsely understood:

a. That the comprehension of a concept:

al. is expressed indeed by many notes whereof the sum can be diverse, according as the nature is known more or less perfectly,  
a2. without however the comprehension itself of the concept being varied;

b. For the notes of the comprehension express the very nature of the thing, or the constitution of the objective concept:

b1. in itself.

b2. not for us.

B. Therefore modern writers ERR, who, like Keynes and Goblott, propound a subjective notion of comprehension, which savours of nominalism.

a. KEYNES:

al. Distinguishes comprehension and connotation:

ala. He calls connotation the sum of the notes by which HERE AND NOW I understand explicitly such or such an object; in other words, by 'connotation' he means what we are actually and explicitly thinking about the several notes which we use to define the concept. Thus the connotation of the concept 'ruminant' would be 'animal that chews the cud', these notes being taken as including only what I am actually and explicitly thinking of in saying these words.

alb. By the name 'comprehension' he designates the recognizable properties of some object (v.g. 'cloven-footed' in a ruminant).

a2. But this distinction is based in nominalism.

a2a. For if the comprehension expresses the essence of a thing, it virtually contains its properties, and therefore comprehension and connotation are the same.

a2b. Even more, comprehension, as said above, must be taken objectively:

a2b1. That is, comprehension designates the complex of the notes whereby the objective concept is constituted in itself.

a2b2. But Keynes, on the contrary, takes connotation subjectively, i.e. inasmuch as it is the complex of the notes whereby the concept is constituted:

a2b2a. not in itself,

a2b2b. but for us.

b. GOBLOTT admits the same distinction, but:

b1. Says moreover that in the comprehension of a concept are contained.

not only the properties necessarily derived from an essence, but all the concepts contained therein as species or sub-species, and all the properties which they in turn imply. (Cf. Goblot; *Traite de Logique*, ch. III: 'Le Concept et l'Idee\*', Scientia, t.XI, 1912). Therefore:

bla. In comprehension he includes extension itself (the sum of the concept's inferiors, so that, for example, Aryan, Semite, Negroid etc. right down to Peter and Paul, would be included in the comprehension of 'man'; and likewise in the comprehension of 'beast' would be included vertebrate, invertebrate etc, right down to this horse and this oyster),

bib. iWhereas:

blbl. Connotation is increased when extension is diminished,

blb2. Comprehension, on the contrary, is increased as extension is increased.

blc.~ Distinction is to be made between concept and idea:

bid. By the name "CONCEPT" he designates an abstract and poor notion which contains only the elements of connotation;

blc2. Whereas by the name 'IDEA' he designates a notion which embraces the comprehension, which therefore is rich with all the determinations included in the comprehension.

bid. Finally, he says that the comprehension of a concept is measured by the number of propositions in which some concept can be the subject.

b2. Goblot:

b2a. Forgets that the differences contained under a genus are only in potency and 'per accidens'. and not actually (or virtually) and 'per se'.

b2al. But in the comprehension of a concept are contained only those things which 'per se' befit the concept.

b2a2. Therefore illegitimately does he include extension in comprehension.

b2b. Likewise, illegitimately does he distinguish between idea and concept, for:

b2bl. The idea, according to his notion of it, does not contain actually, but only potentially, the differences included in it.

b2b2. The concept contains not only those things which are actually and explicitly expressed, but also, just as does the idea, all those things which are potentially contained.

b2b3. Wherefore 'idea' and 'concept' are not two diverse notions, but identical.

b2b4. Hence Goblot;

b2b4a. is too nominalistic in his notion of the concept;

b2b4b. and too realistic in his notion of the idea.

b2b5. Finally, the definition which he gives of comprehension:

b2b5a. Is valid only in necessary matter (In other words, in which attribution is made 'per se', not 'per accidens').

b2b5b. Is a sign rather than a definition. (Cf. Maritain: *Introduction to Logic*, pp. 22-27).

40. EXTENSION: A nature, abstracted by apprehension, becomes universal, and befits many individuals, to which the concept is said to be extended. Therefore the EXTENSION of a concept is DEFINED; THE MULTITUDE OF SUBJECTS TO WHICH THE CONCEPT BEFITS OR WHEREOF IT Encompasses THE NATURE. Thus, for example, the extension of 'dog' is the sum-total of all the "brutes which are called by the name 'dog'.

A. According to Goblot:

a. The EXTENSION of a concept is measured by the number of propositions in which the concept can be the predicate.

b. This notion of extension is vitiated by the same vices as the definition of comprehension propounded by Goblot.

B. According to greater or less extension, a concept is said to be SUPERIOR or INFERIOR. Thus the concept 'animal' is superior to the concept 'man', this latter being inferior; whereas the concept 'man' is superior to the concept 'Hindoo'. this latter being inferior.

a. A superior concept is called;

al. A POTENTIALLY. because its parts (its inferiors) are contained in it only potentially.

a2. Or LOGICAL WHOLE, because it is implied by, or its parts (inferiors), as from, this that something is a man it la

T^S:rconcepL PARTS or suboects whereof the superior or whole is predicated.

11 ovnm. X.m OP EXTENSION AND OOffEEHENSION: This law is the flowing: S^sio Sxi SS^VES TOWAHDS EACH OTHEE THAT SO PJffi form is oomerehension iess, and vice versa.

A. This law follows inwiedlatly from the notions of oomprehension and extension set out above\*

B. This law may be thus illustrated by example, schematically;-

RATIONAL .Sentient, .  
.Living,  
.Corporeal,.  
.Substance.,

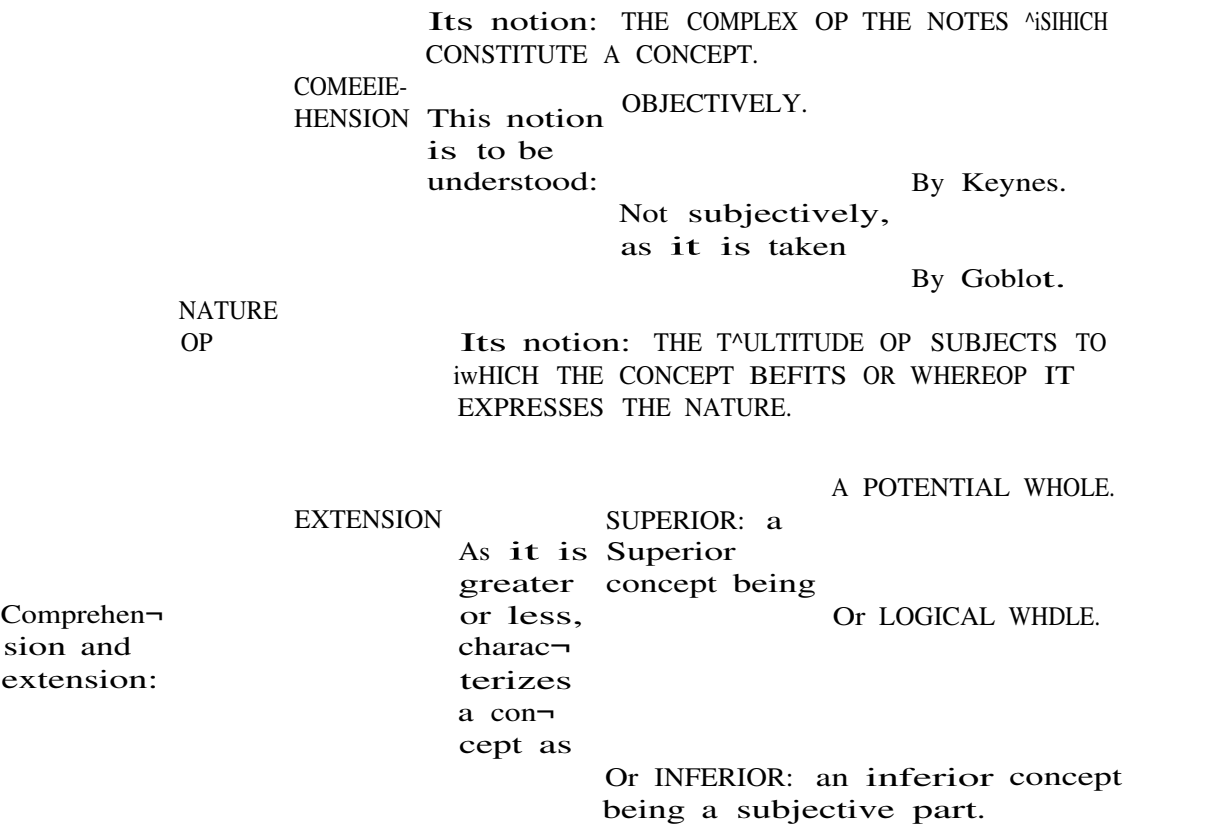
OOMERE-  
HENSION

EXTEN-  
SION

— — ■ /  
Sentient,  
Living,  
Corporeal,  
Substance.

All  
men

42. **S**CHEMATIC SUMMARY: What has been said in the fore-going article may be thus schematically recapitulated:-



COROLLARY: Their general law; SO FAR FORTH AS COMPREHENSION IS GREATER, THUS FAR FORTH IS EXTENSION LESS, AND VICE VERSA.

ARTICLE THREE

DETERMINATION OF THE NATURE OF A CONCEPT.

43. CONCLUSION: The solution of the question regarding the nature of a concept is, as will appear from what will be said hereunder (nn.44-46), the following: THE NATURE OF A CONCEPT IS DETERMINED BY OR TAKEN FROM ITS COMPREHENSION; BUT FROM ITS EXTENSION ARE TAKEN ITS PROPERTIES.

44. DOCTRINE OF MANY MODERN WRITERS: According to many modern authors, who are infected with nominalism, the nature of a concept is determined by its extension.

A. For they consider only individuals.

B. They understand comprehension subjectively, i. e. insofar as it is the complex of the notes whereby a concept is constituted for us. not in itself. For which reason they conclude that the comprehension cannot determine the nature of a concept.

45. THE NATURE OF A CONCEPT IS TAKEN FROM ITS COMPREHENSION: On the contrary, it must be said that the nature of a concept is taken from its comprehension.

A. This is evident, if it is admitted that the comprehension expresses the essence of a thing, not a collection of individuals.

B. Comprehension must be taken, as said above (n.39), objectively, i.e. it must be taken as expressing the complex of the notes whereby the concept is constituted in itself.

C. Therefore the comprehension of a concept expresses primarily the essence, secondarily the properties of a thing:

a. For a property, as will be said below, flows necessarily from the essence.

b. However, in inductive sciences;

b1. the essence of a thing is not known directly,

b2. but only the empiriological properties which the descriptive definition expresses.

46. EXTENSION IS A CERTAIN LOGICAL PROPERTY OF A CONCEPT: Therefore the extension of a concept is a certain logical PROPERTY which a nature obtains in the mind.

A. A concept has a nature (comprehension) which is participable by an infinite multitude of individuals; and herein lies its extension.

B. This property befits it from the ideal existence which the nature has in the mind.

C. Whereupon Maritain well writes:

a. "It is important that the notion of extension and comprehension be firmly established from the very beginning, for any taint of nominalism will prevent it from being rightly understood. In nominalism the concept has no reality other than that of the individuals which it represents. Its essential and original character as a concept is accordingly derived from its extension, that is-, from the extent of its universality, or its applicability to a greater or lesser group of individuals. However, if it is true that a concept presents an essence, nature, or quiddity immediately to the mind, and that this essence is something real, then it must be said that the concept as such is essentially and originally characterized by its comprehension, that is to say by the sum of the constitutive notes of the nature that it presents to the mind. Thus the extension of the concept is nothing more than a property following inevitably upon abstraction, and presupposing the comprehension of the concept; in other words, the concept is universal only because it reveals (clearly or obscurely) the necessary constitution of some **essence**..

b. "The extension of a concept is a logical property that a nature has in our mind. The extension of a concept includes both the individuals and the objective concepts (universal but of less extension than itself) in which it is realized. For example, both the concept 'man' and the concept 'beast' are contained in the extension of the concept 'animal', and consequently 'this man, that man, this horse, this butterfly etc' are also and by that very fact contained in the extension of the concept. A concept's extension includes an infinite multitude of individuals (for there is an infinity of possible human beings and beasts). Therefore extension is measured not by the greater or lesser number, but rather by the greater or lesser (infinite) multitude of individuals to which a concept applies. This alone suffices to show that a universal concept is anything but a collection of individuals; it applies to an infinite multitude because it is originally one (in the mind). That which it presents immediately to the mind is not a collection or series of individuals, but the nature realized in each one of them.

c. "We have said that the extension of a concept presupposes its comprehension. Therefore, to consider a concept as to its 'extension' does not mean to abstract from its comprehension, nor to look upon it as a mere collection of individuals - that would simply amount to destroying it as a concept. To consider 'man' as to its extension is to consider this object of thought in relation to the multitude of individuals to which it applies, but it is also to consider it as having a certain characteristic comprehension and as being one in the mind, that is, as being something other than the multitude of individuals in which it is realized.

d. "Nominalism tends to confound the extension of the concept with its resolution into a simple collection of individuals, and thus completely vitiates the notion of extension." (Maritain; Introduction to Logic, pp. 22-28).

47. SCHEMATIC SUMLIARY: IHfthat has been said in the present article may be thus schematically recapitulated:-

	According to many modern authors: the nature of a- concept is determined by its extension:	For they consider only individuals.  And they understand compre- hension sub.jectively.  Because the comprehension expresses the essence of a thing.
Determination of the nature of a concept;	That the nature of a concept is determined by its comprehension;	Therefore comprehension must be taken objectively,
		Primarily the ESSEICE of a thing.  Secondarily the PROPERTIES of the thing.
But' it must be said;		Therefore comprehension expresses:
	That the extension of a concept is nothing but a cer- tain logical pro- perty which a nature obtains in the mind;	Inaanuch as the concept has a nature (comprehension) which is participable by an infinite multitude of individuals; where- in lies its extension.  This property befits a concept from the ideal existence which the nature has in the mind.

ARTICLE FOtm.

division' of concepts.

48. FOUNDATION OF DIVISION, AND ORDER OF PROCEDURE: In a concept;
- A. Are to be considered;
    - a. These two;
      - a1. The nature represented by the concept;
      - a2. The mode according to which the nature known by the concept is apprehended.
    - b. ?/hence the FOUNDATION of the general division of concepts.
  - B. Now:
    - a. The former division, which is called MATERIAL - because the nature represented is the matter of the concept - is the same as the division of natures. This division will be dealt with later when it will be question of the ten predicaments.
    - b. But the latter division, which is called FORMAL - because the manner in which the nature is represented by the concept formally deter- mines the concept - will be dealt with here.
  - C. Concepts are DIVERSELY divided on the score of their mode of signi- fying or of representing:
    - a. On the score of comprehension; which is the ESSENTIAL division, as is self-evident, (n.49).

b. On the score of extension; which division is on the score of their PROPERTY. (n.50).

c. On the score of perfection, (n.51)•

d. On the score of origin, (n.52).

e. On the score of end, (n.53)\*

49. ESSENTIAL DIVISION- OR DIVISION ON THE SCORE OF COMPREHENSION: This division is explained as follows:

A. Let us take the concepts 'man', 'white man', 'dog', 'philosopher', 'musician'. These concepts differ by reason of comprehension.

a. 'Man' and 'dog' represent, ONE ESSENCE only.

a1. Note the words 'one essence', not 'one note'. for the comprehension of 'man' and of 'dog' consists of several notes.

a2. These concepts are called SIMPLE or INCOMPLEX, inasmuch as they represent ONE ESSENCE only.

b. 'White man', 'philosopher', 'musician', on the contrary, represent SEVERAL ESSENCES:

b1. And indeed;

b1a. The first, to wit, 'white man' explicitly represents several essences, namely 'human nature' and 'whiteness'.

b1b. The others, to wit, 'philosopher' and 'musician' implicitly represent several essences, for they signify 'man endowed with philosophical science or musical art'.

b2. Such concepts are called COMPOSITE or COMPLEX, inasmuch as they express SEVERAL ESSENCES.

b. Let us again consider a simple concept, v. g. 'man'. It can be proposed under another form, to wit, the concept of 'humanity'.

a. Humanity expresses the same essence as man, but otherwise.

a1. For;

a1a. Whereas 'man' expresses a subject endowed with human nature,

a1b. 'Humanity' expresses this human nature nakedly, WITHOUT SUBJECT.

a2. And so:

a2a. 'Man' is a CONCRETE CONCEPT, i.e. a concept signifying that which is, or a SUBJECT HAVING SUCH A NATURE.

a2b. 'Humanity' is an ABSTRACT CONCEPT, i.e. a concept signifying;

a2b1. not that which is,

a2b2. but that whereby it is, to wit, the NATURE WHEREBY (man) IS THAT WHICH HE IS.

b. With regard to this distinction, NOTE:

b1. That both concrete and abstract concepts are ABSTRACT:

b1a. In that both are derived from sensible experience by the intellectual operation called abstraction;

b1b. And in that both abstract from the individual notes of the intuitively perceived sense objects.

b2. Nevertheless;

b2a. Concepts such as 'humanity', which signify, not that which is, but the nature whereby it is what it is, are abstract to the second power, since they abstract a form from its subject in order to consider it by itself.

b2b. Only in contrast with this sort of abstraction are concepts such as 'man' called CONCRETE.

c. 'Concrete' is not to be confused with 'individual';

c1. A concrete concept can indeed be singular, inasmuch as it represents an individual subject, but it is not necessarily so.

c2. Indeed, in the example given, 'man' signifies a subject, but a universal subject, to wit, a subject which abstracts from all individual characteristics.

c3. Accordingly;

c3a. Whereas a concrete concept signifies a form or nature IN A SUBJECT,

c3b. An individual or singular concept signifies a form or nature



IN ONE SINGLE INDIVIDUAL DETERMINATE SUBJECT: such is the concept 'this man' or 'Napoleon Bonaparte\*.

C. Let us consider further a concrete concept, v.g. 'man', 'philosopher', 'musician'.

a. These do not have themselves in the same way:

al. For:

ala. Whereas 'man\*' signifies ONLY a subject having human nature;

alb, 'Philosopher' and 'musician\*' signify:

albl. PRINCIPALLY and DIRECTLY (in recto) philosophic or musical science,

alb2. and SECONDARILY and INDIRECTLY (in obliquo) men endowed with these sciences.

a2. Accordingly:

a2a. A concrete concept having a single significate is called an ABSOLUTE CONCEPT;

a2b. While a concrete concept which adjoins to the principal significate another secondary significate is called a CONNOTATIVE CONCEPT.

b. It is to be observed that an ABSTRACT concept is always absolute. Thus 'whiteness\*' and 'humanity\*' are absolute concepts.

50. DIVISION ON THE SCORE OF EXTENSION: This division is made according to the PROPERTY of a concept. (Cf. n.46).

A. The concepts 'man', 'white man', 'dog', 'philosopher', and 'musician', are extended to many or several individuals. Accordingly they are called UNIVERSAL CONCEPTS. But not all universal concepts are in the same way universal. For the concepts 'man\*' and 'philosopher\*' do not have themselves in the same way relatively to individuals as the concepts 'family', 'army', 'nation\*.

a. Concepts such as 'man\*' and 'philosopher\*' express a nature common to many, but which befits EACH individual of the many. Thus human nature befits not only all men but each man. Such concepts are called DISTRIBUTIVE UNIVERSAL CONCEPTS.

b. But it is otherwise for the concepts 'family', 'army' and 'nation',

b1. For the significate of these concepts befits each family, army or nation, but NOT EACH INDIVIDUAL of the family, army or nation.

b2. In brief, the significate of these concepts befits only the COLLECTION named by these words; and therefore such concepts are called COLLECTIVE UNIVERSAL CONCEPTS.

B. And again if we consider distributive universal concepts:

a. Such as 'man' or 'philosopher', we find that each is said of all the individuals to which it is extended, ON THE SAME SCORE (as having the same significate, or as signifying the same character): 'man\*' is attributed to Peter, to Paul and to John etc. with the same significate, (signifying the same character), for it bespeaks the human nature of each. These concepts are called UNIVOCAL CONCEPTS.

b. But if, instead of these concepts, we take the concept 'healthy', which indeed befits man, food and colour,

b1. Yet ON A DIVERSE SCORE (as having a diverse significate, as signifying a diverse character), and indeed:

bla. befitting man as a SUBJECT having health,

tblb. befitting food as a CAUSE of health,

blc. befitting colour as a SIGN of health.

b2. These concepts are called ANALOGOUS CONCEPTS.

4

C. Thus far we have spoken of concepts which are simply universal,

a. If, by means of the particle 'some\*' or of a similar particle (v.g. 'some men', 'some dogs\*):

al. The extension of a universal concept is restricted:

ala. not indeed to one individual,

- alb. but so that it still **NEVERTHELESS** BEFITS SEVERAL individuals;
- a2. the concept remains;
- a2a. universal,
- a2b. but not simply universal.
- b. It is then called a **RESTRICTED** **UNIVERSAL** or **PARTICULAR** concept.

D. But if instead of the particle 'some' taken plurally (as in 'some men', 'some dogs');

- a. We use;
- a1. the particle 'this' or 'that', (as in 'this man', 'that man'),
- a2. or the particle 'some' taken singularly (as in 'some man', 'some dog'),
- a3. or a proper name, (as Peter or Paul),
- b. the concept:
  - b1. no longer remains universal,
  - b2. but becomes **SINGULAR**, inasmuch as its extension is restricted to ONE individual only.

51. **DIVISION ON THE SCORE OF PERFECTION;** This division, although it is accidental, is of the **GREATEST IMPORTANCE**, since our knowledge passes through diverse grades, hardly arriving at perfection.

A. The foundation of the diversity of concepts on the score of perfection is found in the manifold manner in which we know what is the thing which we apprehend through a concept.

- a. Nevertheless we begin to conceive something concerning some thing before we know what it is. to wit, 'when we know concerning it Only WHAT IT IS NOT.

- a1. For this, it suffices that we know something diverse from the thing to be known.

- a2. Thus concerning an 'isotope', one might know only that it IS NOT a man.

- a3. This concept 'non-man' is called an **INFINITE** or **INDEFINITE CONCEPT**.

- b. But whenever concerning some thing we know, even most imperfectly, what it is. we have concerning this 'thing' a **FINITE CONCEPT**. Of the finite concept alone is it question here.

B. Let us return to the examples given above.

- a. The concepts;

- a1. 'Man', 'philosopher', 'musician', designate determinate essences; they suffice to distinguish those essences from ALL OTHER essences.

- a2. On the contrary, the concept 'animal':

- a2a. suffices indeed to distinguish animal from plant and mineral,

- a2b. but not to distinguish man (rational animal) from brute (irrational animal).

- b. Accordingly;

- b1. The former concepts befit only ONE essence (simple or composite);

- b2. The last befits SEVERAL essences (note that we say "essences", not "individuals").

- c. Hence;

- c1. The last (animal) is called a **COMMON** or **OBSCURE CONCEPT**, according as it is common to SEVERAL essences, without distinguishing one from another.

- c2. The former (man, or philosopher, or musician), which befits ONE essence only, is called a **PROPER** or **CLEAR CONCEPT**.

C. But not in the same way do a child and a philosopher conceive man.

- a. A child conceives man through external forms, i. e. through a sum of accidents, such as "two-legged", "featherless", "upright", "walking", "emitting talk-sounds", "emitting laughter-sounds", "emitting weeping-sounds", "having an expressive face", "subject to anger", "subject to joy", etc.

- a1. Which external forms or accidents:
  - ala, taken separately, befit several things (essences), as:
    - alal. 'two-legged' befits man and bird;
    - ala2. 'featherless' befits man and horse;
    - ala3. 'upright' befits man and kangaroo;
    - ala4. 'walking' befits man and rooster;
    - ala5. 'emitting talk-sounds' befits man and parrot;
    - ala6. 'emitting laughter-sounds' befits man and kookaburra;
    - ala7. 'emitting weeping-sounds' befits man and hyena;
    - ala8. 'having expressionful face' befits man and monkey;
    - ala9. 'subject to anger' befits man and cat;
    - alal0. 'subject to joy' befits man and dog;
  - alb. but taken together befit man alone.
- a2. Such a concept is called CONFUSED or NON-QUIDDITATIVE, inasmuch as it does not express the essential notes of the concept.
- b. But a philosopher conceives man as 'rational animal':
  - b1. These notes display the essential predicates of man.
  - b2. Such a concept is called DISTINCT or QUIDDITATIVE.
- D. A philosopher conceives man as a rational, sensitive, living, corporeal substance.
  - a. Therefore this quidditative concept of man as he is known by the philosopher:
    - a1. Expresses all the essential notes of man.
    - a2. Wherefore it is called a COMPLETE concept,
  - b. But of man alone among substances has a philosopher such a concept:
    - b1. For of other substances, such as 'dog' and 'rabbit', he is ignorant of the specific difference.
    - b2. In such cases the concept is called INCOMPLETE.
- E. With an incomplete concept is not to be confused a concept, complete indeed, but NOT STRICTLY QUIDDITATIVE, in which all the essential predicates are known, not however positively, but in a POSITIVE-NEGATIVE way.
  - a. Thus it is with the concept which a philosopher has of a brute,
    - a1. He knows all its essential notes indeed;
    - a2. Yet one of them, to wit, its specific difference (which he knows, as 'irrational'), he knows positivo-negatively only.
  - b. This concept of 'irrationality' is called positive-negative:
    - b1. For it positively signifies what rationality is,
    - b2. And adds thereto a negation.
- F. Although a strictly quidditative concept expresses quidditatively the whole thing, yet it may not totally display its notes, i.e. in not exhausting the whole knowability of the thing.
  - a. Indeed:
    - a1. Of no thing has man such a COMPREHENSIVE concept.
      - God alone knows HIMSELF AND ALL THINGS comprehensively.
    - a3. An angel knows HIMSELF comprehensively.
  - b. But men, even by their most perfect concepts, know only APPREHENSIVELY, i.e. not totally.

52. DIVISION ON THE SOURCE OF ORIGIN: The question of the origin of our concepts has been already briefly touched above; for it has been said that they are obtained by means of abstraction (nn.27-30).

- A. Therefore it must be said;
  - a. That all our concepts are ABSTRACTIVE, i.e., formed:
    - a1. not from the physical presence of the thing,
    - a2. but from its merely mental (intentional) presence.
  - b. Otherwise INTUITIVE knowledge would be had.
  - c. But in human knowledge, the only intuition in the proper sense of the word is found in the external senses, and sensitive consciousness.

B. Note the qualification "in the proper sense of the word": for besides this meaning, the terms "intuition" and "intuitive" are used in diverse, but less strict, ways.

a. Sometimes these terms are used to designate our singular concepts of a thing PHYSICALLY present.

a1. For since, as is shown in psychology, our intellect knows the material singular only reflexively, by converting itself back over sensitive knowledge, in this reflexion the intellect is indeed borne upon the singular thing, but this concept is not of a thing physically present to the INTELLECT, and therefore such a concept does not merit the name, 'intuitive', save QUITE BIPROPERLY because the object is not physically present save to the SENSES.

a2. On the contrary, the name 'intuition\*' may be given to the reflexion of our intellect upon its own acts, in which it experiences not only its own acts, but the very existence of the soul. For this knowledge is terminated indeed at a concept (species expressa - expressed type) but it is of a thing physically present to the INTELLECT.

a2a. In this meaning, intuitive concept;

a2a1. Retains what is ESSENTIAL to proper intuition, to wit, the PHYSICAL PRESENCE OF THE THING;

a2a2. But it is deficient in this, that it requires, as is shown in psychology, a formal concept (species expressa - expressed type).

b. Sometimes also a concept is called intuitive, to signify an immediate concept:

b1. And thus:

b1a. 'Intuitive' signifies a concept obtained WITHOUT DEMONSTRATION,

b1b. And it is opposed to a mediate concept, or a concept obtained by the aid of demonstration.

b2. In this acceptance;

b2a. 'Intuitive concept' is not at all opposed to 'abstractive concept\*';

b2b. And so some authors, such as Garrigou-Lagrange and Maritain, can rightly speak of an 'abstractive intuition\*' of our intellect,

C. Hence the acceptations of the terms 'intuition\*' and 'intuitive' may be thus schematically exhibited:-

QUITE PROPERLY to no natural human knowledge save that of the external senses (and sensitive consciousness - sensus communis).		
The name 'intuition*' or LESS 'intuitive*' is PROPERLY given	to the reflexion of our intellect over its own acts, whereby it experiences	The term of its own acts (its concepts).
		Its own acts.
		Itself (the intellect).
		The existence of the soul.
to our immediate concepts.		

QUITE BIPROPERLY to our singular concepts.

53. DIVISION ON THE SCORE OF END: The end of knowledge or of science can be twofold;

- A. For we may know:
  - a. For the sake of knowing;
  - b. Or for the sake of a work.

t

- B. Therefore concept is distinguished into:
- a. SPECULATIVE concept, 'which contemplates a thing in order to stay in this contemplation.
  - b. PRACTICAL concept, which likewise contemplates a thing, but for the direction of a work.

54\* SCHEMATIC SUMMARY: The fore-going divisions of the concept may be thus schematically summarized:-

## ARTICLE FIVE.

## RELATIONS OF CONCEPTS TO EACH OTHER.

55\* ORDER OF PROCEDURE; Thus far we have spoken of concepts in themselves. Now we come to speak of the relations which they may have to each other.

56. IDENTICAL AND DIVERSE CONCEPTS; The relation of two or more concepts to each other is obtained by comparison of their comprehensions and extensions.

A. If several concepts, signifying the same, have THE SAME comprehension extension, they are STRICTLY IDENTICAL. This is so with 'man\*' and 'rational animal\*.

B. But another verdict is to be given, if, signifying the same, they have THE SAME extensions only, their comprehensions being diverse.

a. This is so with:

a1. '(4 X 16)' and 'the square of 8\*;

\* a2. 'Equilateral triangle\*' and 'equiangular triangle\*.

a3. 'Rational animal\*' and 'unfeathered biped\*.

b. Such concepts are called EQUIPOLLENT.

C. If they have diverse significates, concepts are called DIVERSE. Thus, diverse are these concepts:

a. 'Man\*' and 'horse\*.

b. 'Animal\*' and 'man\*.

c. 'Blind\*' and 'seeing\*.

d. 'vulgar\*' and 'scholarly\*.

57. DIVERSE MODES OF DIVERSITY OF CONCEPTS; But these concepts are in diverse ways diverse;

A. 'Vulgar\*' and 'scholarly\*' are diverse;

a. in such wise that:

a1. NEITHER does one infer the other,

a2. NOR does one exclude the other.

b. In other words, they have NO relation or connexion between them.

c. In such case, concepts are called INPERTINENT.

B. But 'animal\*' and 'man\*' have relation between them. For there is inclusion of one by the other. They are said to be PERTINENT BY SEQUEL.

a. However, 'man\*' includes 'animal\*' in such wise as not to be included in 'animal\*.

a1. Accordingly;

aa. The concept which is included ('animal\*') is called SUPERIOR;

ab. The concept which includes ('man\*') is called INFERIOR.

a2. In such case, concepts are called UNEQUAL or NON-CONVERTIBLE.

b. But inclusion may be mutual,

b1. Thus 'rational\*' and 'sensible\*;

ba. being diverse concepts,

bb. and pertinent by sequel,

b1c. MUTUALLY include each other.

b2. In such case, concepts are called EQUAL or CONVERTIBLE.

C. It is otherwise:

a. Between;

a1. 'Man\*' and 'horse\*;

a2. 'Man\*' and 'non-man\*;

a3. 'Blind\*' and 'seeing\*;

a4. 'Blue\*' and 'red\*;

a5. 'Father\*' and 'son\*.

b. **Pot:**

b1. They EXCLUDE EACH OTHER;

bla. And for this reason are called FERTHOTT BY REPUGNANCE or OPPOSITE.

bib. For OPPOSITES are; Those things which cannot be together in the same thing under the same respect.

b2. Yet not in the same way"are they pertinent by repugnance or opposite.

c. <sup>7</sup> IJanJ and \*horse\* are said to be BiPROEERLY OPPOSITE or DISPARATE concepts: because:

c1. BCPROPERLY OPPOSED are: Those things whidi. as ^pposed and repugnant, have not reference to each other in anv special way: as 'virtue\*' and \*stone\*,

c2. And:

c2a. These concepts, to wit 'man\*' and \*horse', express things utterly diverse without any reference to eadi other.

c2b. Note here the word "things" (not concepts) **without any reference:** for they exclude each other.

d. **But** the other concepts, in the exanples given, are IROPERLY OPPOSITE:

d1. Because:

d1a. PROPERLY OPPOSED are: Those things which, as opposed and repugnant, have reference to each other in a special way: as 'virtue\*' and 'vice\*.

d1b. And the things represented by those concepts have some relation to each other.

d2. But diversely are they related to each ctiiier:

d2a. 'Man\*' and \*non-man\* exclude each other CQNTIADICTORILY;

d2a1. Because one simply posits what the other removes or negates;

d2a2. So that there is no medium between them.

d2a3. Hence they are called CONTRADICTORY concepts.

d2b. 'Blind\*' and 'seeing\*' have PRIVATIVE exclusion of one for the other:

d2b1. Because one posits what the other removes in a subject apt to have it;

d2b2. So that thei\*e is between them a negative medium only, to wit, 'si^tless\*' (as a tree is sightless, - neither seeing nor blind).

d2b3. Hence they are called concepts FRIVATIVELY OPPOSITE.

d2c. \*Blue\* and \*red\* exclude each other CQNTRARILT:

d2c1. Because one not only removes tte other, but posits something positive which is exclusive of the other.

d2c2. So that between them there is a positive medium, to wit, the intermediary colours, such as purple: and as between prodigality and avarice there is reasonable thriftiness; and as between rashness and cowardice there is braveiy. \*

d2c3. Hence they are called CCNTRARY concepts.

d2d. 'Father\*' and \*son\* are opposed RELATIVELY-

d2d1. Because they bespeak such an order to each other that one cannot be understood without the other.

d2d2. Hence they are called concepts RELATIVELY OPPOSITE.

58. SCHEMATIC SUMMARY: What has been said in the fore-going article regarding the relations of concepts to each other may be thus schematically recapitulated;-

## CHAPTER POUR.

### THE SIOI OP THE CONCEPT, OR TEEM.

59. ORDER OP PROCEDURE; This consideration of the term, which is the sign of the concept:

A.- Will treat:

- a. First. of the necessity of terras or of language.
  - b. Secondly, of the nature of terras: but since the understanding of the nature of terms pre-requires the understanding of the nature of sign, \*
- this treatment of the nature of the term will deal:
- bl. In the first place, with the term as a sign}



b2. In the second place, with the nature of the term: which treatment will be twofold, to wit:

b2a. On the notion of terms;

b2b. On the division of terms.

c. Thirdly. of the properties of the term: but since one of these properties, to wit, supposition, is of chief importance, this consideration of the properties of the term will consider:

c1. In the first place, supposition.

c2. In the second place, the other properties of the term.

B. Hence the following order:-

.Article one.

.Article two.

.Article three.

.Article four,

.Article five.

. Article six.

On the  
term:

#### ARTICLE ONE.

#### NECESSITY OF MANIFESTING CONCEPTS BY SENSIBLE VOCABLES.

60. PACT OF SPEECH: That man uses sensible vocables, or speaks, (and writes), is evident from experience.

61. NECESSITY OF SPEECH: But man uses sensible vocables, or speaks and writes), as moved by necessity on three heads, to wit:

A. Inasmuch as he is a rational being, man is naturally sociable.

a. For which reason he has a necessity to use sensible vocables to manifest his concepts in order to communicate with others: which is done by speech.

b. As Maritain writes: "Man is naturally a 'social\* or 'political\* animal; he is made to live in society (this is **so on** account of his specific character, a being capable of reasoning, because he cannot make fitting progress in the work of reason except through help and instruction of others). Consequently, the aptitude for acquiring knowledge of things is not enough; he must be able to express his knowledge verbally. From this necessity arose the system of conventional signs, called language, by which men communicate their thought: a wonderful instrument fashioned of articulate sound passing through the air, imparting through the most pliant and subtle of materials our innermost and most spiritual selves." (Maritain, Introd. to Logic, p.45).

c. To quote St. Thomas; "If indeed man were naturally a solitary animal, sufficient for him would be the passions (conceptions) of the mind whereby he would be conformed to things themselves, so as to have knowledge of them in himself; but because man is an animal naturally political and social, it was necessary that the conceptions of one man become known to others, which is done through the voice-sound; and therefore it was necessary that there be significative voice-sounds for this that man might communicate with each other. Wherefore those who are of diverse languages, cannot well communicate

S“511=255r“'''=\*~

35.

Stfoonefra^th^il're^tnTt sensltlvs

which abstracts from >i because man employs also -in+en concept-  
only about tMncr, he carries tith knmledge,  
manifest his conoo^Z^ ^ ^ a"<3 future in t-}mi \* @hout  
and to those who a?e^to^o^^@°\_\*° dist^t ®®"  
a^ to M,,.. t^uw tle, the L^ce“^.

“"E" ritterir aatartalnoa by „en begin, f . ft,  
faollitate3^t£:h,, "^rornS“^’'^° vocable, by It. „,ture, help, or

aystema of a1S^5;I^f“;v."= i" aaaS o? Se?L1 “^‘\_  
aastetanoef^eSX^ t\*\*??^\* “ “'af aecSia^ S^LrfT""\*',  
beware of thinS^fi economy of i?f5f valuable

op. cat. p.46). •• aat aa its substitute ana%igg^1?f,,’^(^|^\_

article Twn,

—sig^g 0^

o2. SENSIBLE VOCABLES ARE ejTOMe ot,

asne a""he"@:Pn ^"ttou^ts°““S: .  
A\* Just as:

2 sss,- “ —• =;,'KS t.:srV2-;5is;

"an egtetnally

Su?e®|"'O®® mw THEflsavES- But ·  
—— .0. a^—i—

^ atoke manifests fire. SO!a.seaiu«^Cajr2^oi^^ ,

a. That is, the sign (smoke) and the signed (fire) are known by a twofold knowledge as it were by passing from one to the other ('quasi discurrendo': QQ Disp. de Verit. q9, a.4, ad 4).

b. Such a sign, that to wit, whereby the signed is known by the medium of a previous knowledge of the sign, is called an INSTRUMENTAL SIGN.

B. Speaking above (n.34) of the formal concept, we said that it represents the nature of an external thing. Like smoke, it manifests another than itself. It is accordingly a sign of the nature of an external thing.

a. But because the essence of the formal concept is identical with the nature of the external thing (n.34), the formal concept manifests the nature of the external thing (the signed), not by a twofold act, nor 'as it were by passing from one to the other', but by a single act.

a1. BY THE SAME ACT whereby is known the essence of the formal concept, is known the nature of the external thing, ON ACCOUNT OF THE IDENTITY OF THE TWO.

a2. Such a Sign, to wit, whereby the signed is immediately known IN THE SIGN, is called a FORMAL SIGN.

a3. In regard to which may be noted the following from St. Thomas; "It is different to know something IN SOMETHING and to know something FROM SOMETHING;

a3a. "For when something is known IN SOMETHING, it (knowledge) is achieved by one movement to both.....and such knowledge is not discursive."

a3b. "But then is something said to be known FROM SOMETHING, when it is not the same movement to both, but first the intellect is moved to one, and FROM this is moved to the other; wherefore here there is a certain discursus." (QQ Disp. de Verit. q5, a.15).

b. The foundation of the diversity between instrumental sign and formal sign lies in this, that whereas;

b1. In the FORMAL sign there is IDENTITY;

b1a. not indeed of the sign and the signed (for in that case, there would be no representing of another than self),

b1b. but of the essence of the sign and of the signed.

b2. In the INSTRUMENTAL sign there is DIVERSITY.

o. Therefore;

c1. Not rightly speak those, such as Goudin, Zigliara, and Pirotta, who think;

c1a. That similitude of sign and signed suffices for the formal concept;

c1b. And say that;

c1b1. not only the concept,

c1b2. but also a picture and a statue, are formal signs.

c2. In truth;

c2a. This similitude does not suffice,

c2b. But the similitude must be so perfect between the sign and the signed:

c2b1. that:

c2b1a. the essence of the sign IS IDENTICAL with the signed, the two differing on the point of existence alone;

c2b1b. And therefore the formal concept alone is a formal sign.

c2b2. Which is the teaching of John of St. Thomas. Gredt, Maritain, etc., (Cf. Blanche. Bulletin Thomaiste, nov. 1925, pp.3'4; Goudin, Logica Minor, I, q. I, a. I, I; Zigliara. Dialectica, tom. 1, cap. I, 2; Pirotta. Summa Phil., vol. I, p.24, n.33, 1: Gredt. Philos. Arist. Thom., I, 1, n.9; Maritain. Les Degres du Savoir, annexe I, pp.769 ss.)

C. Therefore in the formal sign there is always present a REAL NEXUS between the sign and the signed: to wit, identity between the essence of the sign and of the signed, and consequently a real relation of similitude between the sign and the signed. But in an instrumental sign the sign and the signed have themselves otherwise.

a. In the sign 'smoke' indeed, there is a real nexus between the smoke and the fire, which real nexus is a relation of effect to cause.

a1. For which reason smoke is said to be a natural sign of fire.  
 a2.\* Similarly, by reason of real similitude, between a statue and him whose image it is.<sup>^</sup>

b. But there are other instrumental signs. For example, to find an unknown person in a crowd, the holding in his right-hand of a newspaper, or his standing bare-headed beneath a clock, may be determined by AGREEMENT as a sign of him.

b1. In this case, the relation between the sign and the signed is a merely MENTAL relation (relatio rationis).

b2. Then we have a CONVENTIONAL sign, or ARBITRARY sign, or sign 'ad placitum'.

b3. The oral or written vocables whereby thoughts are manifested are CONVENTIONAL INSTRUMENTAL SIGNS.

### ARTICLE THREE.

#### THE NOTION OF TERMS.

64. DEFINITION OF TERM: Under the designation 'terms' are understood nothing else than the signs of concepts.

A. Therefore TERM is DEFINED: "A VOCABLE CONVENTIONALLY SIGNIFICATIVE - VOX SIGNIFICATIVA AD PLACITUM". (Cf. Periherm. I, c2; c.4)»

B. For a right understanding of this definition, it is to be noted:

a. That "vocables signify the conceptions of intellect IMMEDIATELY, and, by the medium of them, things.", (in I Periherm, lect.2).

a1. For if names immediately signified things:

ala. Neither would there be any false names;

alb. Nor would there be any equivocal terms.

a2. Thus Maritain writes: "The term signifies simultaneously and in the same act both the concept and the thing, but it immediately signifies the concept (the mental concept or sign of the thing, and the objective concept, or the thing as object presented to the mind) and only signifies mediately the thing itself (as it exists outside the mind) by means of the concept: 'vocables signify the conceptions of intellect immediately, and by the medium of them, things;' 'names do not signify things save by the medium of intellect.' For:

a2a. "We intend to have our words impart 'what we are thinking about things'. that is- - our concepts;

a2b. "The word 'man', for example, signifies human nature, abstracting from individual human beings, but human nature thus abstracted exists only in our apprehension or in our concept, not in the real;

a2c. "What we say signifies either the true or the false, but truth or falsity exists only in our concepts, not in things themselves;

a2d. "If words themselves signified things directly there would be no equivocal terms." (Maritain: Introd. to Logic, p.47).

b. The terms signify MORE IMMEDIATELY formal concepts, but MORE PRINCIPALLY objective concepts:

b1. That more immediately they signify formal concepts, is clear from this, that vocables immediately signify the conceptions of intellect: but objective concepts are identified with the thing.

b2. That more principally they signify objective concepts, is clear from this, that the formal concept is not that which we know, but that wherein we immediately know things.

## ARTICLE FOtm.

## DIVISION OF TERMS.

65. DIVISION OF TERMS IN THEMSELVES; Since terms are signs of concepts, terms in themselves are divided in the same way as are concepts themselves. Therefore there would be no further question, in addition to what has been said regarding the division of concepts above, were it not that terms, like concepts, are ordered to the formation of signs of the work or product of the second and third operation of the mind, in which signs are propositions and argumentations.

66. DIVISION OF TERMS AS PARTS OF A PROPOSITION: The division of terms as they are parts of a proposition is unfolded as follows;

A. Let us take this proposition; "This helpless child and that powerful man are truly companions in sorrow."

a. In this proposition:

al. Are to be distinguished;

ala. Two demonstrative adjectives: 'this', 'that'.

alb. Four substantives; 'child', 'man', 'companions', 'sorrow'.

ale. Two adjectives; 'helpless', 'powerful'.

aId. One conjunction; 'and'.

ale. One proposition: 'in'.

alf. One copula: 'are'.

alg. One adverb: 'truly'.

a2. But in the proposition these terms have not the same office.

b. On the one hand;

b1. The adjectives, conjunction, preposition, adverb, and even one of the substantives (which is in an oblique case), to wit, 'sorrow', have in the proposition no other office than that of modifying and determining the other substantives, to wit; 'child', 'man', 'companions'.

bla. 'This' narrows the extension of the term 'child'; 'that' likewise narrows the extension of the term 'man'.

bib. 'Helpless' similarly restricts the term 'child', and 'powerful' in like fashion restricts the term 'man'.

b1c. 'And' connects or conjoins the terms 'child' and 'man',

b1d. 'In sorrow' restricts the term 'companions',

b1e. 'Truly' determines the signification of the term 'companions' lest it seem to signify a mere metaphor.

b2. TERMS which thus signify something as a modification and determination of another are called SYNCATEGOREMATIC TERMS, or consignificative terms.

c. On the other hand, the three substantives in a direct, or nominative, case ('child', 'man', 'companions') and the copula ('are') signify something which is represented as something by itself (per se).

c1. Such terms are called CATEGOREMATIC TERMS, or significative terms.

c2. But these have:

c2a. Something common;

c2b. Something proper.

r

B. These substantives are called NOUNS (NAMES).

a. They designate finite concepts; for infinite concepts are signified by means of a noun, the syncategorematic particle 'not' being added. (Cf, n.31.A.).

b. However, not only substantives are nouns (names), but also all categorematic terms which signify things in a permanent or stable way.

b1. Therefore "nouns" here includes:

bla. Predicative adjectives used as nouns (as in: "The tree is green", where 'green' is a predicative adjective); for such a predicative adjective is a categorematic having the role of stable extreme in a proposition.

bib. Substantive adjectives used as subject (as in "Green is a colour", where 'green' is a substantive adjective used as a noun); for a substantive adjective used as a noun is a categorerae having the role of stable extz\*eme in a proposition.

blc. As well as substantives, such as 'child' and 'man'.

b2. Thus in the proposition; "Green is beautiful", both 'green' and 'beautiful' are nouns.

c. But vihen **it** is said that a thing is signified by a noun (name) IN A PERMANENT OR STABLE WAY;

c1. This;

cla. does not affect the thing itself;

clb. but the way wherein **it** is signified..

c2. And this mode is based in the very nature or essence of **it**.

c3. This is e:qlained by Maritain; "The noun is a term that signifies things 'sine teTi5ore'" (without time) "as inten^joral. Time is excluded, not from the things that the noun may signify (for there are nouns that denote time), but from the manner in which the noun signifies. For the noun signifies the thing as stable, as having a certain mode of permanence, (even if the thing, itself is not stable, e.g. 'movement', 'dxange'; this stability in the noim's mode of signifying does not mean that the thing itself is stable, but means that the noun takes as its foundation in the thing the stability of the essence or nature of this thing. Time is always time; and as long as **it** exists 'movement' qua movement. immutably keeps its nature, movement).

d. Bergson and Le Roy, on account of the nominalism or idealism which they profess, are precluded from understanding this.

dl. And wrongly therefore do they say that concepts and words break up reality into immobile parts and render reality devoid of movement, thus deforming the real.

dla. What they say would be true if the mode of permanence or stability affected the thing conceived or signified.

dlb. But since this mode of permanence or stability affects only the noun's way of signifying, what they say is false.

d2. Indeed, further, they forget that:

d2a. If the noun expresses the nature of things,

d2b. There is another categoreme, to wit, the verb, whose office **it** is, on the contrary, to signify MOVEMENT, as will be seen shortly.

d2c. Indeed "since language cannot simultaneously express the stability of essences and the flux of movement **it** puts the burden once and for all upon two terms, the noun to e:q)ress the former, and the verb to express the latter. Both of these terms accomplish their task by the manner in which they signify each, viz, stability of essences and flux of movement (and not by the things which they signify). Meo'itain; Introd, to Logic, pp.55"56).

e. Prom what has been said **it** is clear that the NOUN is rightly defined by Aristotle;

e1. "A VOCABLE. CONVENTIONALLY SIGNIFICATIVE, WITHOUT TIME, WHEREOF NO PART SEPARATELY SIGNIFIES. FINITE AND DIRECT - VOX SIGNIFICATIVA AD PLACITm,~ SINE TE^TPORE, CUIUS NULLA PARS SEPARATA SIGNIFICAT, PittITA ET RECTA". (Periherm. I, c2, Iba 19; cf. lect.4- S.trhoraa).

e2. But, lest anything still remain obscure in this definition, let the following e;;^lanations be noted:

e2a. "A conventionally sienificative vocable" is the definition of term in common, stating what is common with **all** terms, (n.64).

e2b. The remaining elements in the definition distinguish the noun from,those terms which are not nouns; to wit;

e2b1. "Without time" distinguishes the noun from the verb, which signifies with time.

e2b2. But, as noted above:

e2b2a. Prom the noun is not excluded time as a thing signified, v.g. as the noun 'da.y' or 'hour' signifies time.

e2b2b. But what is excluded is signification with time, as a mode of signifying;

e2b2c. Because;

e2bcl. a noun signifies a thing as a standing extreme;

e2b2c2. a verb signifies a thing as flowing or fluent.

e2b2. "Whereof no part separately signifies" distinguishes the noun from a speech (discourse) and from a ccxnplex term:

e2b2a. For:

e2b2a1. A speech (v.g. 'A just ynan pays his debts') is not a noun, but is composed from the noun.

e2b2a2. A complex term (v.g. 'A just man') is not a noun, but is composed from several nouns.

e2b2b. This phrase "no part separately signifies" is to be understood of the part as it exists within the noun, for composite nouns (such as •pro-consul', 'wage-earner', 'water-pipe'), must be admitted as nouns, for these are true nouns and signify a simple essence, although they are composed of parts which, detached and outside the noun, are significative of themselves.

e2b3. "Jlinie" excludes infinite terms (v.g. 'non-man': n.51.A)j for an infinite term is not a noun (name), because;

e2b5a. Removing the significate of the term ('man'), it does not name or signify something determinate,

e2b3b. But withholds itself from naming;

e2b3c. And though nevertheless it signifies something, this is, so to speak, 'per accidens' or indirectly, or consequently, or mediately.

e2b3d. Note that;

e2b3<sup>^</sup>. It is required for the character of an infinite term, that it indeterminates or infinitates from an adjoined negation some positive signification.

e2b3d2. Therefore the terms 'none', 'no one', 'nothing', 'non-being' and such like are not infinite terms, because they do not indeterminate or infinitate some positive signification by an adjoined negation, but simply signify a negation.

e2b4. "Direct" excludes the oblique cases, (i.e. vocative, genitive, accusative, dative and ablative).

e2b4a. For by declension a noun declines from the proper character of noun; or, in other words, a noun in an oblique case is a noun which falls away (cadit) from the proper character of noun.

e2b4b. So that a noun in an oblique case is signified:

e2b4b1. not "as something, and as a 'certain extreme in itself'".

e2b4b2. but "as of another, respectively to another",

e2b4b3. and therefore is a syncategoreme:

e2b4c. Thus;

e2b4c1. The vocative is either a speech (as when 'Peter!' means 'Pay attention' or something similar) or an interjection.

e2b4c2. The genitive modifies or determines a noun (v.g. 'rotor's book').

e2b4c3. The accusative similarly modifies or determines a noun (v.g. 'Peter loves Mary - Petrus amat Mariam' which is, really this; 'Peter is loving of Mary - Petrus est amans Mariae'; in which example 'of Mary - Mariae' modifies or determines the noun 'loving - amans').

e2b4c4. The dative similarly modifies or determines a noun (v.g. 'Peter gives a book to James - Petrus dat librum Jacobo'. which is really this; 'Peter is giving a book to James - Petrus est dans librum Jacobo'; in which example 'to James - Jacobo' modifies or determines the noun 'giving').

e2b4c5. The ablative, similarly modifies or determines a noun (v.g. 'This child and this man are companions in sorrow', in which example 'in sorrow' modifies and determines the noun 'companions').

- C. But in this does a VERB principally differ from a noun, that a
  - verb signifies WITH TIME, that is, it signifies, <sup>^</sup>tion or passion; not "as a certain thing, which can befit a noun" (in I Periherm lect. 5, n.7), as we have noted above against Bergson and Le Roy, but as a MOVEMENT (action) which is measured by time.

a. It is to be noted:

a1. That "in every verb other than the verb- 'IS' there is included,

ala. "the general act, which is 'be',

alb. "and a special act or the thing of the verb which is bespoken by the participle of that verb;

a2. "and therefore every verb, other than 'is',

a2a. "is resolved by;

a2a1. "'is.',

a2a2. "and 'its participle\*;

a2b, "as 'runs', that is, 'is running\*.'" (Expositor Logicae P. Hisp. Tract.I, De verbo, 3a Doct.)

b« The verb 'is' always signifies existence, but diversely;  
 bl. For if v/e say: 'Paul IS', that is, whenever existence is predicated of the subject, the verb 'is' signifies actual existence.  
 b2. On the contrary, when 'is' is taken as a copula which mediates betw/een the subject and the predicate, it signifies actual existence or possible existence, real existence or ideal existence. Thus, for example;  
 b2a. 'Peter is a musician'; here 'is' signifies real actual existence.  
 b2b. 'Man is a rational animal'; here 'is' signifies real possible existence.  
 b2c. 'Animal is a genus'; here 'is' signifies ideal possible existence.  
 b2d. 'Paul is the subject of the proposition': here 'is' signifies ideal actual existence.

c. But;  
 cl. Since the existence signified by the verb;  
 cla. either itself is predicated of the subject (then the verb is called a verb-predicate),  
 clb. or affirms the existence of the predicate in the subject,  
 c2. Therefore it must be rightly said' that the verb always holds itself on the side of the predicate, or is a note of the predicate.

d. Therefore 'Maritain v/ell explains;  
 dl. "Every verb is equivalent to the verb to be followed by an attribute or predicate.' 'I ftorite' is equivalent to 'I am '.vriting'. Thus the verb to be is justly entitled the verb par excellence.  
 dla. "In a proposition such as 'I am' (we shall call such a proposition a 'proposition with a verb'predicate'), which is equivalent to 'I am exist-ing', the verb to be exercises the function of both copula (inasmuch aa it unites the subject to the predicate) and p:~dicate (inasrau<di as it signi-fies the existence attributed to a subject), but it directly manifests (in actu signato) the latter function only.  
 dlb. "In a proposition such as 'Peter is a man' (which wa shall call a 'proposition with a verb-copula'), in whidi the verb to be is followed by the predicate it fpplies to the subject, the verb directly manifests only its function as copula.  
 die. "This copulative function is always implied by the verb t2\_h\$ (and consequently ty all verbs) because it corresponds to the very act of the mind itself applying a determination (a predicate) to a subject.  
 d2. "The first sense of the verb to be is that in which the copulative function is exercised without being directly manifested as it is in other verbs and in which existence is attributed as a predicate to a subject; •I am', 'Hector is no more' (propositions with verb-predicates).  
 d3. "Prom this first sense is derived the second wherein the verb to be directly manifests its copulative function: 'I am sick', 'Aciilles is not invulnerable' (propositions with verb-copulas).  
 d4. "It is important to note that, even when used simply as a copula, the verb to be continues to signify at least ideal or possible existence. In fact the copula does nothing but express the relation (habitudō) of the predicate to the subject; but what relation? The relation of identifica-tion of one with the other, the relation by which these two objects of thought, distinct as concepts (ratione), are identified in the thing(re) in actual or possible, real or ideal existence. In other words, when used as a copula the verb to be affirms that the thing, with such and such determinations, exists either actually outside the mind or possibly outside the mind or, in the case of beings of reason, in the mind only.  
 d4a. "The proposition 'a myriagon is a ten-thousand-sided polygon' is equivalent to; 'the object of thought myriagon exists (in possible existence outside the mind) with this essential determination: ten-thousand-sided polygon.'  
 d4b. "When I want to signify that the determination (the form), 'unable to exist in reality' is found in a certain subject, e.g. a •chimera' I have recourse to the notion of existence and the verb to be, in order to combine these two objects of thought and I say 'A chimera is 'unable to exist in reality' that is 'the object of thought chimera exists (in my mind) with this property of being unable to exist in reality.'  
 d5. "Thus the verb to le always signifies existence in a proposition with a verb-copula just as much as in a proposition with a verb-predicate; and all propositions affirm or deny the actual or possible, real or ideal existence of a certain subject determined by a certain predicate. In



other words, they either affirm or deny that this subject and this predicate are identified in actual or possible, real or ideal existence.

d6. "Therefore truth, whether it be a truth in the 'ideal\*' or in the 'existential\*' order, always consists in the conformity of our mind with being or existence, with possible existence in the first case^ and actual existence in the second.

d7. "Hence the logical law: for an (affirmative) proposition to be true:

d7a. "it is not enough;

d7a1. "that the predicate agree with the subject,

d7a2. "the subject must also exist in the manner of existence required by the copula.

d7b. For example, if I say 'Bonaparte is first consul' the proposition is not true because the subject, Bonaparte, does not exist in the actual existence required by this copula (that is, in the present time). Bonaparte was consul, but he is no **more**.

d8. "The;

d8a. "Propositions which we are designating as 'propositions with a verb-Copula\*' were called propositions 'de tertio adjacente\*' by the ancients; these include all such propositions as 'I am writing', 'Peter is a man', in which the subject, predicate and copula are explicitly stated.

d8b. "Likewise they called 'propositions with a verb-predicate\*' 'de secundo adjacente\*' (e.g. 'peter lives', 'I write'), in which the verb signifies the predicate itself at the same time as it unites it to the subject.

d8c. "In a proposition 'de secundo adjacente\*', 'peter is', the verb to be is attributed to the subject as a predicate, and signifies that Peter exists in reality.

d8d. "In a proposition 'de tertio adjacente', 'Peter is a man', the verb to be is not attributed to the subject as a predicate, but merely as joined to the predicate 'man' so as to form with it but a single member of the proposition attributed to the subject.

d9. "In all cases, whether it signifies the predicate itself, or is necessary in order to unite it to the subject, the verb 'stands with the predicate\*.

e. All that has been said above, is indicated in the classical definition of WRB:

e1. Vihch is: "A VOCABLE CONVENTIONALLY SIGNIFICATIVE WITH TD-^, HEREOF NO PART SEPARATELY SIGNIFIES, FURTHER: AND DIHSC, AND ALWAYS IS A NOTE OF THOSE THINGS WHICH ARE PREDICATED OF .WORLD—NAMES SIGNIFICATIVA ad PLACITUM CM IMPROBE, CUIUS RATIONE PARS SIGNIFICATA SEPARATA. FINITA ET RECTA. ET IORMI. QUAE DE ALTERO PRAEDICANTUR, SE^, g^R. EST NOTA." (Periherm. I^ c, 3, 16b, 6; cf. lect. 5 3. Thomae).

e2. But, that any obscurity in the notion of the verb be obviated, the following explanations are proposed;

e2a. "A vocable conventionally significative" is the definition of term in common, stating what is common to all terms (n.64.)

e2b. The remaining elements in the definition distinguish the verb from those terms which are not verbs; to wit:

e2b1. "Significative with time" distinguishes the verb from the noun, which signifies without time, as explained above.

e2b1a. This means that the verb signifies a thing in the manner of an action or movement or with a certain mode that consists in being effected in time.

e2b1a1. Therefore the verb signifies in a single concept and as a single object; - take the example 'Peter sees' - ;

e2b1a1a. both a certain thing ('vision\*' in the example given),

e2b1a1b. and a certain mode of proceeding in time: which mode of signifying is what is characteristic of the verb, differentiating it from the noun: which mode indeed consists in the action or movement according to which this thing (vision) is signified as flowing from the subject and joined with the subject.

e2b1a2. Accordingly even the verb 'is' signifies;

e2b1a2a. existence (the thing),•

e2b1a2b. as exercised in time (the mode).

e2b1a3. That which is independent of time or is eternal is thereby excluded:

e2b1a3a. not from the things which the verb may signify (for a verb may signify something eternal, as in these examples: "A euclidian triangle

has three interior angles together equal to two right-angles"; "Man is a rational animal"; "God is wise").

e2bla5h. but from the manner wherein the verb signifies. For of itself the verb signifies things as taking place in time, eternal things being apprehended by our intellect by analogy with temporal things; wherefore eternal things are signified by our concepts and by our terms with a temporal mode which pertains, not to those things, but to our mode of signifying them.

e2blb. Therefore "significant with time";

e2blbl. does not signify that the verb must mark the difference between past, present and future time (indeed, on the contrary, as will be explained later, the past and future decline from the proper character of verb, - just as the oblique cases decline from the proper character of noun, as said above).

e2bib2. but rather signifies that it is essential to the verb to signify something in the manner of an action or movement.

e2b2. "Whereof no part separately signifies" distinguishes the verb from a speech (discourse) and from a complex verb.

e2b2a. For;

e2b2al. A (perfect) speech is constituted from a verb, but is not a verb.

e2b2a2. A complex verb is not a verb but is composed from several verbs.

e2b2b. This phrase "no part separately signifies" is to be understood of the part as it exists within the verb - as was said above regarding parts of the noun.

e2b3. "Finite" excludes infinite verbs (such as \*non-runs\*).

e2b3a. For an infinite term is no more a verb than it is a noun.

e2b3b. But note that a verb as it is within a proposition cannot be infinitated; for by the very fact that a negation is added, the proposition becomes negative.

e2b4. "Direct" excludes oblique verbs;

e2b4a. Such as;

e2b4al. Past and future (tenses of) verbs; for these signify what was or will be; which is not signified by way of action or movement, but as what is in the past or the future.

e2b4a2. Optative and imperative moods; for neither do these signify an action as exercised in time by the subject.

e2b4a3. Subjunctive mood, which, inasmuch as it is subjunctive, is a mere grammatical mode of expressing the conjunction and subordination of a proposition; hence inasmuch as the subjunctive mood is reduced to the indicative, it is a verb (indicative).

e2b4b. For all those oblique verbs decline from the character of verb, - just as the oblique cases of the noun decline or fall away from the proper character of the noun, as explained above.

e2b4c. Wherefore the present indicative alone properly fulfils the notion of verb.

e2b5. "Always is a note of those things which are predicated of another" excludes the participle and the infinitive.

e2b5a; Which indeed must be excluded from the notion of verb;

e2b5al. for though they signify with time,

e2b5a-2. yet they can hold themselves on the side of the subject as well as on the side of the predicate, and therefore are reducible to the noun as well as to the verb.

e2b5b. For, as explained above, the verb must always hold itself on the side of the predicate.

67. DIVISION OF TERMS AS PARTS OF ARGUMENTATION; To the division of terms as they are part of an argumentation allusion has already been made where subject and predicate have been mentioned.

A. Although;

common usage, subject (s)- and predicate (P), along with the verb, are called elements of a proposition;

b. Yet more rightly they ought to be called parts of an argumentation.

B. For the illation or inference of one truth from another;

a. pertains;

al. not to the copula,

- a2. But to the  $\wedge$  and P,  
 b. As Maritain says:  
 b1. "The basic elements of every enunciation (proposition), considered simply in itself, are the yecb (be it merely a copula, or a copula and predicate united in one term) and the noun (subject or predicate)."  
 bla. "This is why we say that the division of the enuncjative term" (i.e. the term as it is part of a proposition or enunciation) "into-noun- and verb is an essential one;  
 bib. "Whereas its division into S, Pr. and C(opula) is an accidental division.  
 b2. "However, the division of the syllogistic term" (i.e. the term as it is part of a syllogism or argumentation) "into S and Pr. is essential, for in this case the term and the proposition are considered as parts of the reasoning — .  
 b3. "Considered as part of argumentation- (the syllogistic term), the term is the last element into which ever;- argumentation is necessarily resolved.  
 b3a. "It is not the function of the argumentation, as such, to construct or state the truth 'Peter is a man', that is, to unite the term man to the term Peter by means of the copula  $\wedge$ . This is the function of the enunciation.  
 b3b. "Argumentation as such draws or infers:  
 from the fact that (I) 'Man is mortal',  
 and (II) 'Peter is a man',  
 the truth (III) 'Peter is mortal':  
 it unites Peter and mortal by means of man. Therefore the terms it admits of formally as an argumentation are the three terms Peter, mortal and  $\wedge$ .  
 b3b1. "'Peter' is the subject of the conclusion;  
 b3b2. "'mortal' is the predicate of the conclusion;  
 b3b3. "'man', called the, middle-term, is the predicate of one of the premisses and the subject of the other.  
 b4. "The copula (and the verb inasmuch as it contains the copula) is not a syllogistic term; it does not belong to the syllogism formally, but only by presupposition, as a part of the propositions of which the syllogism is constituted. The proposition itself, considered as part of argumentation is resolved into two terms only: the subject and the predicate." (Introd. to Logic, pp. 56-57).

## ARTICLE FIVE.

### THE PRINCIPAL PROPERTY OF TERMS. OR SUPPOSITION.

68. ORDER OF PROCEDURE; As we have dealt with the division of terms, so now we deal with their properties, as terms are parts of the proposition.

A. For language has a certain inadequacy to, or deficiency from, thought, not being a copy or fac-simile thereof.

a. Wherefrom it is necessary that terms, as they are used in propositions as parts thereof, fulfil the character of propositional terms expressive of thought, according as they have certain properties which flow from their essence.

b. Which is thus well explained by Maritain;

b1. "Everything directly conceived or thought of by our intelligence, everything of which we have a concept or 'mental word' may be expressed or translated into language. But despite the flexibility, the docility, the delicacy of any system of language-signs, this expression is always more or less deficient in relation to thought. The loftiest intellectual knowledge, which reveals a world of consequences within a single principle, must, so to speak, be scattered and diluted in order to be orally expressed.

b2. "Indeed it would be absurd to expect material signs, uttered one after the other, to duplicate or furnish a fac-simile of the vital and immanent act of thought. Nor is it the purpose of language to furnish such a fac-simile of thought: its object is to permit the intelligence of the hearer to think, by an active repetitive effort, what the intelligence

of the speaker is thinking. From this point of view human language performs its function perfectly. Granted the interpretative effort and the intellectual activity of the hearer, it is a perfect system of signs; suppress this effort and this activity and there remains but a radically insufficient system of lifeless symbols.

b2a. "In other words, language not only supposes an effort - often how bitter, authors know but too well - on the part of the one who expresses his thought, but also requires an effort on the part of the listener: a beneficent effort that keeps us from depending entirely on the sign and saves us from falling into what Leibnitz called 'psittacism\*', a parrot-like use of language.

b2b. "Nor would it be amiss to note in this connection that the more life and intellectual quality a philosophy possesses the more forcibly must that philosophy experience the distance between language and thought, without for all that cowardly forsaking all expression of the truth.

b2bl. "Hence a twofold necessity accrues to philosophy:

b2bla. "It must acquire a mastery over language by means of a whole technical apparatus of forms and verbal distinctions (terminology),

b2blb. "And it must unceasingly exact from the mind an act of internal vitality such that words and formulae can never replace, for they are but to spur the mind to this act.

b2b2. "All philosophy that relies upon words, all over-facile philosophy, is 'a priori' a philosophy of lesser thought and consequently of lesser truth.

b3. "Language, then, expresses or signifies as much of our thought as is necessary in order that another intellect, hearing the pronounced words, may present the same thought to itself. The remainder is not necessarily, and even should not be, expressed, lest it over-burden and infinitely complicate the winged signs of thought.

b3a. "This unexpressed margin of thought, to be supplemented by the intelligence of the hearer, is remarkably evinced by the diverse properties that affect the term considered, not by itself, but in the context of the proposition, as part of a proposition.

b3b. "The ancient logicians made an exhaustive study of these properties, a study that may seem irksome to inattentive minds, but one that is most instructive from the point of view that we have just indicated and absolutely indispensable for anyone who would acquire the art of reasoning.

b3c. "As Aristotle says, since we cannot bring the things themselves into our discussions, we have to let words appear for them and testify in their stead." (Note: "In discussion we use vocables instead of things, because we cannot bring the things themselves into midst of us": Aristotle; I Blench. I, 164a, 5). But we shall inevitably fall into a host of errors unless we observe that:

b3cl. "not only may the same word have several different meanings,

b3c2. "but also that the same word, even while having the same meaning (for example, the one given in the dictionary) and consequently even 'while signifying the same intelligible nature, may, according to its use in the context, stand for very different things." (introd. to Logic, pp. 58-59)\*

B. The properties of terms, as they are parts of propositions, are six, to wit;

- a. Supposition.
- b. Appellation.
- c. Amplification.
- d. Restriction.
- e. Alienation.
- f. Diminution.

C. Since the chief of these is supposition:

- a. The present article will deal with supposition,
- b. The following article dealing with the others.

69. NOTION OF SUPPOSITION: The notion of supposition will be clear from the following process:

- A. Let us take these examples;
  - a. "Man is a monosyllable."
  - b. "A man is a rational animal".
  - c. "A man is running."

B. In these examples, the subject 'man'. If it is considered the proposition, has the signification, to wit: it represents the nature of man, who is a rational animal\*

- C. But that same noun has itself otherwise INSIDE THE DIVERSE PROPOSITIONS
- a. In the first, it represents, not the significate, but the sign itself.
  - second, it represents every man, not only actual, but
  - c. In the third, it represents only one individual.

a! The signification of the noun is diverse in the diverse propositions

For the signification of a noun, as it is also in a proposition, is determined by the nature which the noun represents outside a proposition

E. But the diversity of representations in propositions is induced by the nature of the thing represented, not by the nature of the copula

For example, 'man' represents every rational animal, and 'some man' represents some individual because the copula here can designate only the actual existence of some essential predicate.

b. But in the proposition 'A man is running', the copula 'is' signifies only one individual because the copula here can designate only the actual existence of some individual.

W. In the definition of a term for something whereof it is veridical, the copula is required to be of the copulative position.

a. Therefore the supposition of a terra, which is nothing else than its "SUBSTITUTE-VALUE", i.e. its value of being a substitute for some thing, may be described as something in which the term 'terra' is without any variation of its signification.

Lisin, the test of a thing for which this substitution is legitimate, regard being had to the copula.

V. In the proposition 'A terra is running', insofar as it is taken in speech for a-ethesis, the copula 'is' requires something (some person) in the proposition.

b. Otherwise a terra is said not to suppose.

blai. In the proposition; 'Louis XIV was King of France', 'Louis XIV' supposes' for the copula 'was' requires something (some person) in the proposition for which the term 'Louis XIV' can be substituted.

For example, 'Louis XIV will be king' requires the subject 'Louis XIV' does not suppose, for the copula 'will be' requires something (person) in the future.

Ltisfied, since in the proposition 'Louis XIV will be king', the term 'Louis XIV' can be substituted.

0. To judge whether a proposition is about a possible subject or not, it is required for supposition that the proposition be

Si? 'i:/jsrarc- : "iLs;y.T^r:L ar^LfonW^

verified or be legitimate in view of

c2. That a copula always signifies ^ (existence), as said above, which may be:

- c2a. Actual real be; and then:
- c2a1. In the past,
- c2a2. Or in the present,
- c2a3. Or in the future.

- c2b. Possible real be.  
 c2c. Mental or ideal be (esse rationis).  
 c3. That accordingly all that is required for this, that a term suppose, is that the sort of existence denoted by the copula permits the substitution of the term for some thing.

- d. Supposition, accordingly, differs from signification or meaning;  
 d1. For:  
 d1a. The signification of a (univocal) term is one and permanent;  
 d1b. But the supposition is manifold and variable according to the manner in which the term is used in a proposition.

d2. Because:  
 (32a. Signification has reference to that wherefrom the giving of the name springs (that wherefrom the name is imposed), i.e. to the form or nature which it represents to the mind (qualitas nominis).

d2b. Supposition has reference to that to which the name is given (that whereunto the name is given), i.e. to the things or subjects (substantia nominis) to which the intellect applies, in this way or that,—the term itself in a proposition, in order that the term may act as a substitute for the thing to which the intellect applies certain predicates.

d3. In other words;  
 (25a. Signification, which is "representative substitution for a thing", has reference to the natures or essences which are the object of the first operation of the mind (simple apprehension);

d3b. Whereas supposition, which is "applicative substitution", has reference to the subject in which these natures or essences are realized, and which the second operation of the mind (judgment) signifies as existing with such or such predicates.

d4. Thus, in the proposition; 'Man is social', the term 'man':  
 d4a. not only represents (renders present to the mind) human nature (taken concretely, i.e. in an abstract universal subject);

d4b. but also takes the place of the extra-mental thing, i.e. of the individuals to which sociality is attributed by the copula 'is'.

70. DIVISION OF SUPPOSITION: From the examples above given, it is already evident that the suppositions of some term are diverse.

- A. For;  
 a. In the proposition: 'Man is a monosyllable', in which the sign (man) is taken FOR ITSELF, 'not for the thing signified, there is had MATERIAL SUPPOSITION, which is; THE TAKING OF A TERM FOR ITSELF.  
 b. But in the propositions: 'A man is a rational animal', and 'A man is running', where the sign (man) is taken for the THING signified, there is had FORMAL SUPPOSITION, which is: THE TAKING OF A TERM FOR THE THING WHICH IT SIGNIFIES.  
 c. To illustrate the necessity for distinguishing between material and formal supposition, take the following argumentation, which is bad because of a confusion between these suppositions;

A monosyllable does not eat meat.  
 But man is a monosyllable. (Material supposition).  
 Therefore man does not eat meat. (Formal supposition).

- B. But, further:  
 a. In the propositions: 'A man is a rational animal', and 'A man is running', the term 'man' supposes for a thing which it signifies PROPERLY;  
 a1. Wherefore in these propositions there is had PROPER SUPPOSITION;  
 a2.\* Which is; THE TAKING OF A TERM FOR WHAT IT SIGNIFIES PROPERLY.  
 b. But let us take another example: 'The Lamb was immolated for pur  
 b1. Here 'Lamb' supposes formally, because it stands for Christ, i.e. not for the sign itself but for a signified.  
 b2. Nevertheless, because 'Lamb' only METAPHORICALLY signifies Christ, this formal supposition is IMPROPER.  
 b3. For IMPROPER formal supposition is; THE TAKING OF A TERM FOR WHAT IT ONLY METAPHORICALLY SIGNIFIES.  
 c. The necessity for distinguishing between proper and improper formal supposition appears from the following argumentation, which is bad by reason of a confusion between these suppositions;

A lamb is an irrational animal. (Proper supposition).  
 But the victim immolated for the sins of the world  
 was a lamb. (improper supposition).  
 Therefore the victim immolated for the sins of the world  
 was an irrational animal.

- C<sup>\*</sup>  
 a. In the examples given above (B.a.), of proper supposition, the noun 'man' is taken for the SUBJECT having human nature.  
 . a1 Wherefore in both cases there is had PERSONAL SUPPOSITION;  
 as! Which is: THE TAKING OF A TERM FOR THE SUBJECT HAVING THE NATURE  
 SIGM<sup>^</sup> example: 'Vertebrate is a zoological branch'.  
 b1. Here the noun 'vertebrate' supposes indeed formally and properly;  
 but not personally.  
 b2. For it supposes, not for the subject having vertebral nature, but  
 b3. Wherefore 'vertebrate' here has only SIMPLE SUPPOSITION,  
 b4! Which is: THE TAKING OF A TERM FOR THE NATURE ONLY BY WHICH IT  
 SIGNIFIES\*  
 c. The necessity for distinguishing between personal and  
 supposition is illustrated from the following argumentation, which is bad  
 because of confusion between personal and simple suppositions:

Vertebrate is a zoological branch. (Simple supposition).  
 But Pido (my dog) is a vertebrate. (Personal supposition).  
 Therefore pido is a zoological branch.

a' That simple supposition, because it is verified of natures, not of  
 the subjects having these natures, is only COEXTENSIVE or UNIVERSAL, like natures  
 themselves. It also can be verified in personal supposition, but not necessarily.

- b1. For in the proposition: 'Man is a rational animal', 'man' has  
 COMMON SUPPOSITION.  
 b2. But in the proposition: 'The man who is rational is a philosopher', 'man' has  
 SINGULAR SUPPOSITION.

- E. But:  
 a. Just as the universal concept (cf. n. 50), may be:  
 a1. Distributive or collective;  
 a2. Simply universal or particular.

bi 'The Amstel is twelve miles long, or

it TAKES OF A TERM OF ME SUBJECTS WHICH IT SIGNIFIES.

“Effects and positions: 'Man

is

MUCH a

ONE OF THE THINGS WHICH IT SIGNIFIES.

a\*. In the proposition; 'Every animal was in the  
 INCOMPLETE DISTRIBUTIVE SUPPOSITION of 'animal' for here 'animal' signifies  
 or is taken to stand for, not all individual animals, but all the GENERA of

But in the proposition: 'Everyman is mortal',  
 DISTRIBUTIVE SUPPOSITION, for here 'man' designates, or is taken  
 for, all the INDIVIDUALS having human nature.

c. But distributive supposition may also be  
 proposition: 'Every man that is merely man is born  
 of the individuals having human nature, YET WITH THE ADMIS-  
 SION OF AN EXCEPTION; there is had EXCEPTIVE DISTRIBUTIVE SUPPOSITION.

G. But particular supposition may be either disjunctive (determinate)

or a liar', where  
 of the things which it signifies, there is had  
 DISJUNCTIVE (determinate) PARTICULAR SUPPOSITION.

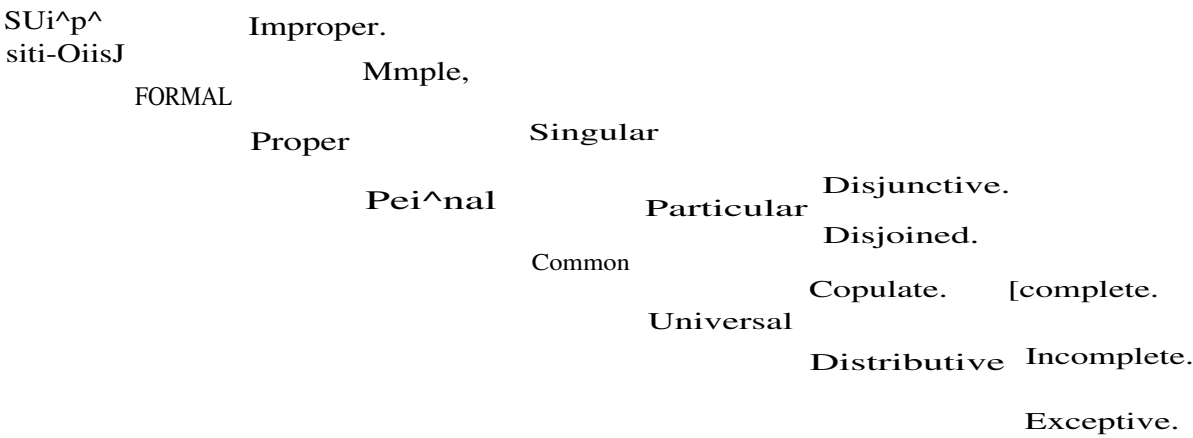
T,,,l in thr -inr^trument is necosnary to m^e

PA^ilCI^LAH

SUEPOSmON. ',

H. Hence the division offeupposition may thus ho illustrated schematically;-

Material.



a. "Accordingly: v(>lv\*

113. "If P acoidentaUy and bontingantly befits S, S supposes \_iaa!i—. ively (disjoinedly).

b. "Wherefore the eu-pposition f S is “^/^“^J.^'^^Uppose bl "If the syncategorematic sign 'some' befits S, -t max PP djsj^'^'^dujoinedly).^ S suppose distribut^.

IjJ, «tif «ir'together', it makes S suppose cojj£ctively.

f;rs;r“h^U”supp°o^as-dhUbunvely.

being then equivalent to 'no horse .

article six.'

mm. ATRRR properties OF TERMS.

72. OTHER EROEEETISS OP TERMS MODIFI SUPPOSITION: Just as.

A. The supposition a term is known from the syncategorematic signs whidi befit a. subject;

B. SO also the other propertie of terms ^sult from other diverse syncategorematic signs which rao^y supposition.



73. **Amplification:** Amplification is the EXTENDING OR BROADENING OF A TERM'S SUBSTITUTIVE VALUE.

- a. The proposition: 'Every-man is fallible\*' may be understood in two senses:
- As this: 'Every man actually existing is fallible'.
  - As this: 'Every man (as a possible essence) is fallible'.
- b. The term 'man' is broader in the latter than in the former.
- c. This transit of a term from a less extension to another broader extension is called **Amplification**\*

B. In the example given, the amplification is effected by the substitution, at least mental, of some syncategorem (v.g. possible) for another (v.g. 'actually existing'). Then the amplification is called **Amplification unto possible being**.

C. Amplification can be effected by the suppression of some adjective, effecting that the proposition is extended to more supposits.

- a. Thus, by the suppression of the terra 'poor';
- The proposition; 'Every poor man is unhappy on this earth', amplified to this:

S: \_\_\_\_\_ is \_\_\_\_\_ than in \_\_\_\_\_

**But \*L's restriction is called Amplification to more supposits.**

74. **Restriction:** Restriction is the RESTRICTING OR NARROWING of a SUBSTITUTIVE VALUE, by a process inverse to that of amplification,

- a. The proposition: 'Every man is fallible', where for 'actually existing man', the term 'man', is used with restriction.
- b. Likewise in the proposition: 'Everyone knows it', where the terra 'everyone' is taken for 'everyone versed in philosophy' or 'everyone living in this town' the terra 'everyone' is used with restriction.

B. In order however that restriction may be an affirmative proposition, two conditions must be

- a. The broader term, which is to be restricted, must be distributive

The restricted term must have the same mode of existence.

from illustration: 'Every man is rational', this cannot be made 'Therefore Louis XIV is rational'; for, since Louis actually exists, it cannot be said that he IS rational, but only that he WAS rational.

75. **Alienation:** Alienation is the TRANSFERRING OF SUBSTITUTIVE VALUE OF A TERM ON TO A METAPHORIC

Example: 'The Lamb was slain.', is alienated by the addition of 'and' to the supposition of the ground. In addition transfers 'lamb' from its proper supposition to an improper metaphoric supposition.

1: **StL's** account of the predicate: as in the example given. The subject: as in the proposition; 'This is ill'. Here 'ass' is transferred from proper to improper supposition owing to the subject; philosopher.

76. **Diminution:** Diminution is the DEDUCTION OF A TERM TO A LESS EXTENSION THAN IT HAS-SIGNIFICATION.

A. Thus in the proposition: 'Every argument is good insofar as true', the subject 'argument' has a less extended supposition than it has extension. For:

- a. Although **it** has no restriction,
- b. Nevertheless **it** supposes only for every true argument.

B. Therefore diminution is not to be confused with restriction (n«74)

- a. For in restriction, a term is restricted by means of a syncategoreme.
- b. But diminution is obtained by the sole use of the term in the proposition.

77r ..APPELLATION: Appellation is the APPLICATION OF THE FORMAL SIGNIFICATE OF ONE TERM TO THE FORMAL SIGNIFICATE OF ANOTHER, as for example in the proposition 'Peter is a heavy eater'.

A. For in this example:

- a. 'Heavy':
  - a1. is not predicated simply or absolutely of Peter;
  - a2. but only under qualification (secundum quid), to wit, 'as an eater';
- b. So that the appellation term (heavy) signifies something other than what it signifies when predicated simply or absolutely (than what it signifies in this proposition: 'Peter is heavy').
- c. For appellation applies something (to wit, the significate of heavy) to a subject:
  - c1. not simply or absolutely.
  - c2. but only by the medium of some formality or determination signified by the term ('eater') which it appellates or 'calls down' or re-imposes upon the subject (Peter).

n. Appellation IS NOT TO BE CONFUSED with simple predication,

a\* For\*

a1. In appellation, the subject must be considered, not only as subject, but also as endowed with a certain determination by means of which it receives the predicate; (v.g. 'Peter' is taken as endowed with the formality or determination 'eater' and by means of this determination receives the predicate 'heavy').

a2. Therefore in appellation, predication is not made save with the particle (expressed or not) 'as', or 'as such' or 'inasmuch as' or 'insofar as' or 'according as' or some such: for otherwise there is had:

- a2a. not appellation,
- a2b. but simple predication.

b. The confusion of appellation with simple predication leads to such sophisms as these;

- b1. Aristotle was great. (simple predication)\*  
But Aristotle was an eater.  
Therefore Aristotle was a great eater. (Appellation).

- b2. He who wills the sufferings of others is cruel.  
But God wills the sufferings of others (of the damned).  
Therefore God is cruel.

b2a. Wherein the first proposition is thus to be distinguished:-

as willing evil to them, "is cruel": (TRUE).

"He who wills the sufferings of others"

as willing what is just, "is cruel": (FALSE).

b2b. And wherein the second proposition is to be contra-distinguished thus:

as evil to them: (FALSE).

"God wills the sufferings of the damned"

as just; (true).

78. GENERAL CONCLUSIONS: From what has been said regarding the of terms (pp«68-77):

A. Three conclusions follow; to wit;

- a. The necessity of distinguishing in discussions, in order to avoid
  - ^ b. The impossibility of finding signs of the concept so determinate that it would be possible to use those signs without paying heed to their signification and use.
  - c. The proposition is not a mere juxtaposition of concepts, but enjoys a true unity: for otherwise there would follow no property from the assumption or acceptance of terms in a proposition.

B. Which is thus lucidly expressed by Maritain; The "brief survey of the diverse properties of the term in the proposition is instructive in several respects.

a. "For if we have really understood that a single term may stand for different things in discourse, even while it keeps the same signification (corresponds to the same concept, and to the same word in the dictionary;

- if we have really understood this - then we shall also understand why the necessity of 'distinguishing', i.e. making distinctions, dominates all human discussions. We shall comprehend also why this necessity arises from the specific character of our intelligence: not only because the same word may signify different concepts, but also because words being the material tools, and concepts the immaterial tools, of rational activity, the reason may put the same concept and the same word with its signification unchanged to different uses.

b. "We shall also understand how useless it would be to attempt to substitute for the Logic of ideas or of concepts, which always supposes the activity of the mind using concepts and words as tools, a logic of written or oral signs, so perfect as to dispense with thought and be sufficient unto itself (the universal characteristic of Leibniz - modern Logics). Of course, a system of signs more perfect and more rigid than ordinary language maybe conceived; but, with the exception of certain limited domains, such as that of algebra, we shall never succeed in completely suppressing the margin of indetermination that subsists around the oral or written sign, and attests to the transcendence of thought over its material symbols.

c. Finally, from another point of view, if we understand that the same word stands for such and such a thing, and has such and such a meaning for thought, depending upon the structure of the proposition in which it is a part, we have already laid hold of an important truth, namely that the proposition is not a mere juxtaposition of words considered as things, but forms a true unity, and is a true whole composed of words taken as parts." (Maritain; Intro'd. to Logic, pp. 75-7d).

#### SCHEMATIC SUMMARY.

79. SCHEMATIC RECAPITULATION: The contents of the foregoing chapter may be thus schematically summarized:-

The social nature of man.

Their NECESSITY arises from The universality of the concept.  
The sensible origin of human knowledge.

Fts notion; THAT IHICH REPRESENTS TO A COGNOSCIT^ -  
TOWER SOiffITfING OTHSR THAI^ ITSELF, AS HDLDING  
STEAD THEREOF.

On terms                      bn the                      POEMAL.  
On the score of its  
order to cognoscitive power-  
   INSTRTOIENTAL.  
Its division                      NATURAL.  
On the score of the cause  
ordering it to the signed  
   CONVMTIQNAL..

Their MM                      Its notion: A VOICE-SOUND CONVENTIONALLY.

   Its Msm                      In itself: As for concepts.  
   Its division                      Of the proposition [noun "  
   "                      As a part                      VERB.  
On the term or sign of the concept:                      -• Of argumentation                      SUBJECT.  
   ^                      IEEDICATE...

The principal: SUPPOSITION.

AI-IHilPICATION.

RESTRICTION.

The others ALIENATION.'

DIMINUTION.

APPELLATION.

SECTION TWO.

PREDICABILITY ITSELF IN GENERAL.

80. ORDER OP PROCEDURE: Since predicability is nothing other than a property of the universal, it cannot be understood-unless ths-nature of the universal be known.
- A. But the nature of the universal, can be considered in two ways.^to

a. **First.** IN ITSELF. . ^ vn  
t>. Secondly. PT^ATTYRTLY to those things whereof it is predicable.

B. Wherefore this section will proceed according to the following order:-

On the universal IN **ITSELF**.Chapter five.

m,-

On the nature  
of the universal

On the universal RELATIVELY  
TO ITS **INFERIORS**.....Chapter six.

CHAPTER FIVE.

THE NATURE OF THE UNIVERSAL IN ITSELF.

81. ORDER OF PROCEDURE: This chapter:

- A. Will:
- a. First, show the necessity to establish the nature of the universal.
  - b. Secondly» expose certain preliminary observations regarding the question of the nature of the universal. j.. i, -4.
  - c. Thirdly, establish the nature of the universal: regarding which it will be shown:
    - cl. In the first place, that the universal represents the real rxature of things;
    - c2. In the second place, that the universal exists as universal only in mind, but in things as singular.
  - d. Fourthly, establish the nature of predicability.

B. Hence the following order:-

	Necessity to establish the nature of the universal...	Article one.
	Certain preliminary observations.	Article.two.
On the nature of the universal in itself:	It represents the real nature of <b>things</b> .—	Article three.
	The nature of the universal: It exists as universal only in mind; but in things as <b>singular</b> ....	Article four.
	The nature of predicability.	Article five.

ARTICLE ONE.

NECESSITY TO ESTABLISH THE NATURE OF THE UNIVERSAL..

82. TREATMENT OF PREDICABILITY: Having acquired knowledge of those.-things which must be known antecedently to the study of question regarding predtCABILITY ITSELF occurs. Regarding this, following the natural order of our knowledge:

A. First, predicability IN GENERAL must be dealt with: (which-is done in the present section).

B. Then, predicability IN SPECIAL must be treated: (which will be done in section three).

83. **NOMINAL DEFINITION OF PREDICABILITY:** But already we have some confused notion of what predicability is, just as we already know what predication is.

A. For in the proposition: \*Peter is a man\*:  
 a. 'Man' is predicated of Peter.  
 b. The act whereby it is affirmed that the concept of man befits the subject 'Peter' is PREDICATION.

B. But this is possible:  
 a. Only because the predicate can be said of Peter.  
 b. This capacity of the predicate is called PREDICABILITY:  
 c. Which accordingly is: THE CAPACITY OF A PREDICATE TO BE SAID OF A SUBJECT.

84. **UNIVERSALS ALONE ARE PREDICABLE:** But not every concept can be a predicate.

A. In these examples;  
 a. 'Peter is a man';  
 a1. S is singular;  
 a2. P is particular (from the second law of supposition: n.71J.  
 b. 'Man is an animal';  
 b1. S is universal;  
 b2. P is particular.  
 c. \*A dog is not a man\*;  
 c1. S is universal.  
 c2. P is universal.

B. Examples could be multiplied indefinitely, but always the predicates would be found:  
 a. To be:  
 a1. either universals. '  
 a2. or particulars;  
 b. but never singulars.

C. In other words:  
 a, Universals alone (simply universal or restricted universals: cf. nn.50, 54) are predicable.

b. And thus it already appears - even though we do not yet know the reason thereof - that predicability befits the universal alone or, in other words, is a property of the universal.

D. AND THEREFORE, in order to find the reason of predi<sup>^</sup>bility as it is the property of the universal, it is necessary to investigate the nature of the universal.

## ARTICLE TWO.

### PBKT.TMTNARY OBSERVATIONS.

85. **NOTION OF UNIVERSAL:** 'Universal' according to etymology would signify 'one towards others' (\*unum versus alia); or one respecting others.

A. But:  
 a. Because one can respect others:  
 a1. Either in signifying others;  
 a2. Or in representing others;  
 a3. Or in causing others;

- a4. in being others;
- b. Therefore is universal divided into:
- b1. Universal in signify-ing (universale in significajidgj;
- b2. Universal in represent-ing l'universale in reppsentandp);
- b3. Universal in caus-ing (universale in causandp);
- b4. Universal in be-ing (universale in essendo).
- c. Which are thus defined:
- c1. Universal in signifying is: ONE SIGNIFYpTG TiAff; wherefore an or^,' term \daich signifies many is a universal in signify-ing; as is the oral^ ^ tenn 'man' which signifies Peter and Paul and John and Margaret and Cecilia and Agnes.
- c2. Universal in representing is: ONE REPRESENTING MANY; wherefore a formal concept which represents many is a universal in representing; as is the formal concept 'man' which represents Peter and Paul and John and Margaret and Cecilia and Agnes.
- c3. Universal in causing is: OFE CAUSING lJANY; wherefore the sun is universal in causing warmth in many bodies upon this earth, and accordingly is called a universal cause; whereas the most universal cause is God, who is a cause universal to absolutely all effects.
- c4. Universal in being is: ONE EXISTING IN MANY .AiTD SAID OP ; wherefore one nature (i.e. one objective character, or one objective concept), which exists in many as identified with them and multiplied in them, wherefore also it is predicated of them, is a universal in being; and indeed since it is one predicated of many, it is also called BEING PET^ICATED (universale in predicando); thus does that one nature which is named by the name 'man' exist in Peter and Paul and John and Margaret and Cecilia and Agnes as identified with each of them and multiplied in them, and therefore is predicated of them distributively.
- d. Which division maybe thus shovm schematically:-

in signify-ing: ONE SIGNIPTING MANY.

In represent-ing: ONE REPRESENTING l^ANY.

Universal

In caus-ing: ONE CAUSING JIANY.

In be-ing or in be-ing predicated: ONE EXISTING IN MANY AND  
L SAID OP MANY.

B. Here we are concerned immediately with the universal in be-ing:

Concerning which, NOTE:

a. That those whereof it is said (predicated) are called its inferiors: thus Peter and Paul and John and Margaret and Cecilia and ^A^es are called the inferiors of man; just as Nightmarch and Windbag and Phar Lap and Bemborough are called the inferiors of horse. om/nrrvM

b. That the universal in be-ing is to be distinguished from the CQ^ION:

ldX For\*

b1l. Comjnon is WHATSOg/BR ONS IN WHATSOEVER WAY BEFITTING MANY. ^

bib. But univer^l l(in be-ing) is a C0?P40N BEFITTING TiANY AS IDENTIJiro YfiTH THE)! AND MULTIPLIED IN THEM.

b1c. Wherefrom it is clear that 'common' is a wider terra than 'universal'.

b2. Accordingly:

b2a. 'Common\*' does not determine whether that which is communicated with many, is numerically the same or not. ^ u- u ^

b2b. But 'universal' does determine this, because that which is communicated to many as universal to them is never numerically the same in the many.

b3. Thus:

b3a. The divine nature is common to three persons, but it does not have itself towards them as a universal towards inferiors, since it is numerically the same in them all; whereas 'man' is foimd in Peter ^d l^ul and John not as numerically the same in them, and similarly horse is found in Mightmarch and Windbag and Phar Lap not as numerically the s^e in them.

b3b. Likewise, a room is a common place of many men, but it is not a universal whereof they are the inferiors.

86. THE QUESTION: The question on the nature of universals is one of the most principal questions of all philosophy.

A. This question has engaged the vigorous attention of philosophers throughout the ages; and it is still very much alive:

a. For it is not really a different question from that of the value of our intellectual knowledge, which is a question upon which ardent controversy has raged, especially from the time of Descartes and Kant until our own day.

h. In the Middle Ages this question was celebrated under the title of "The quarrel on universals".

B. The QUESTION is this: Whether THE UNIVERSAL;

a. Is a mere noise (flatus vocis), or a term to which corresponds NEITHER a universal concept NOR a universal reality, but only a collection of individuals;

b. ^ is a concept, universal indeed, BUT VOID OF UNIVERSAL REALITY;

c. Or are not only the term and the concept universal, BUT THE VERY REALITY ITSELF UNIVERSAL?

C. Which question may be thus set forth schematically:

a. Merely ONE NAME whereby many singulars are NAMED TOGETHER;

a1. And hence, so to speak, a mere 'short-hand name' whereby many names of singulars are collected by abbreviation into one name.

a2. Which is the doctrine of NOMINALISM.

b. Or also ONE CONCEPT, universal indeed, but whereby no universal reality is conceived or represented,

b1. So that the universal is a mere FIGMENT OF MIND.

b2. Which is the doctrine of CONCEPTUALISM.

Is the  
universal

c. Or ONE REAL NATURE; and hence, so to speak, one 'block of reality':

c1. Which is;

cla. conceived or represented by one concept (the universal concept),

clb, and signified or named by one name (the universal term);

c2. So that:

c2a. neither is the universal concept a mere concept whereby nothing real is conceived;

c2b. nor is the universal term a mere term whereby many singulars are signified or named together;

c3. But rather;

c3a. the universal concept immediately represents one real nature,

c3b. and the universal term immediately signifies (the concept of) one real nature.

c4. Which is the doctrine of REALISM.

87. FOUNDATION OF THE SOLUTION: The solution of this question is based upon the unshaken data delivered by the testimony of consciousness.

A. These data of consciousness are;

a. Not the same is it to know some thing (v.g. what is man), and to know the idea of this thing (v.g. the idea of man).

b. The knowledge of some thing (v.g. of man), precedes the knowledge of the idea of that thing (v.g. the idea of man). For consciousness bears witness:

b1. That I DIRECTLY know MAN or HORSE;

b2. And INDIRECTLY, through reflexion only, know the IDEA of man or of horse.

B. From the analysis of these data, it follows that the idea or formal concept is not that which is directly known, but is only that wherein we immediately know the thing.

a. This was not understood by Descartes, who taught that what we know immediately is ideas (which accordingly, for Descartes, are that which we immediately know, not that wherein we immediately know things). from which we mediate:/ know things.



- b. This error is the source of idealism; for it is impossible to find a 'bridge' from ideas to things;
- bl. And accordingly this logical conclusion of this position is found in Kant, who tau^t that things as they are in themselves are unknowable.;
- b2. And still more radically is it found in Berkeley, who denied the existence of sensible things.

### ARTICLE THREE.

#### THE miVERSAL REPRESENTS THE REAL NATURE OF THINGS.

88. DIVERSE DOCTRINES: As indicated above, regarding the nature of the universal, diverse doctrines are held by NOMDTALISTS by CONCEPTJALISTS, and by REALISTS. Accordingly;

- A. First, will be exposed;
  - a. Nominalism (n.89).
  - b. Conceptualism (n.90).

B. Next, it will be shown why these doctrines cargiot be held, and that therefore realism must be admitted (n.91).

89. NOMINALISM; Nominalists hold that to the universal oral term there corresponds in the mind, not even a universal concept, but only a COLLECTION OF INDIVIDTJALS.

- A. This doctrine was taught:
  - a. IN ANTIQUITY;
    - a1. By Heraclitus;
    - a2. By Cratylus;
    - a3. By the latter's disciple, Epicurus.
  - b. IN THE MIDDLE AGES, by Roscelin (9th century).
  - c. IN MODEPJI TIMES, by the EMPIRISTS and SENSISTS, such as;
    - c1. Hobbes (1588-1679).
    - c2. Locke (1632-1704).
    - c3. Hume (1711-1776).
    - c4. Condillac (1715-1780).
    - c5. Wundt (1831-1921).

- B. This doctrine is erected upon either of two foundations, to wit:
  - a. The confusion of intellective knowledge with sensitive knowledge; which is the foundation whereupon the SENSISTS build the doctrine of nominalism.
  - b. Or the theory of T.raRELY PASSIVE intellective knowledge, according to which the intellect has experience of singular things, but cannot by abstraction go beyond this experience: which is the foundation upon which EMPIRISTS-AND POSITIVISTS build the doctrine of nominalism.

90. CONCEPTUALISM: Conceptualists (who are really mitigated nominalists), admit indeed that the universal oral tenn is a sign of A. UNIVERSAL, nONCEPTp to which however there corresponds nothing universal in the real; wherefore the universal is a figment of mind.

- A. This doctrine was taught:
  - a. IN ANTIQUITY by Zeno of Citium and the Stoics.
  - b. IN THE MIDDLE AGES;
    - b1. By V/illiam of Occam,
    - b2. By John Buridan.
    - b3. By Pierre d'Ailly.
    - b4. By Gabriel Biel.
  - c. TN MODERN TIMES;
    - c1. By Kant and the Kantiansj
    - o2. by idealists.

- c3. By many others more or less imbued with Kantian teaching.
- cif. In some way by all;
- c4a. Who exaggerate the activity of the intellect, conceiving this activity as constructive, as does Archambault.
- c4b. Or who think that the singular is the only reality, as Blondel and J. Chevalier.
- c5. And generally, in some way at least, by all who, following Suarez, deny the real distinction between essence and being in things other than God,
  - for according to their doctrine real essence cannot be logically conceived save as existing, and therefore as singular.

B. The principal foundation of conceptualism is exaggeration of the activity of the intellect which is conceived as a faculty merely constructive of its object; whence it follows that the object is not the measure of the intellect, but the intellect measures the object; which is the error of SUBJECTIVISTS AND IDEALISTS.

C. Wherefrom, it is evident how the foundations of conceptualism and of nominalism are thoroughly opposite.

91. NECESSITY TO ADMIT REALISM; The necessity to admit realism appears from the following considerations;

- A. For;
  - a. Indeed;
    - a1. The Nominalists teach what is true inasmuch as they affirm that our intellect acquires knowledge from things;
    - a2. The conceptualists teach what is true inasmuch as they affirm the activity of the intellect.
  - b. But they both err;
    - b1. The Nominalists indeed err inasmuch as they deny the activity of the intellect;
    - b2. The Conceptualists indeed err inasmuch as they deny that human knowledge is measured by things.

B. But both things, to wit, the activity and the passivity of the human intellect, are together maintained by REALISM; and rightly so, since, as is shown at length in psychology, and is critically vindicated in defensive metaphysics;

- a. The human intellect acquires its knowledges from the senses, and therefore must be said to be passive.
- b. Yet not passively does it acquire them, as primary matter acquires determinations, but actively, so that the act of knowledge is elicited by the intellect.

- C. And therefore;
  - a. By reason of the passivity of the intellect, the object of the intellect is indeed an external reality;
  - b. But by reason of the activity of knowledge, this reality is apprehended otherwise than in the real, to wit, abstractively and universally.

D. Therefore the doctrine of REALISM must be maintained, according to which the universal is a concept representing a UNIVERSAL REAL NATURE.

- a. As is testified by consciousness;
- b. According to which;
  - b1. the intellect, as said above (n.87). apprehends, for example. WHAT IS MAN or the NATURAL NATURE of man, before it apprehends the idea of man;
  - b2. or in other words, apprehends the OBJECTIVE concept of man before it apprehends the formal concept.

ARTICLE POUR.

TIE UNIVERSAL EXISTS AS UNIVRSAL DT MIND ONLY.

92. CONCLUSION: Nevertheless, it must be said that THE UNIVERSAL EXISTS AFi UNIVERSAL IN MIND OMiY, BUT IN THINGS AS SINGULAR, as will appear from the following considerations (nn.93“96).

93. RIGHT UNDERSTANDING OP THE REALISM OP THE UNIVERSAL: For the realism of the universal must be rightly understood:

- A. For:
  - a. A universal nature, or objective concept, which is the essence of the formal concept wherein the universal nature is immediately apprehended, has universal existence in the mind;
  - b. And the formal concept is nothing other than the ob.jective concept, or the very nature of the thing INASf^CH AS IT EXISTS AS UNIVERSAL IN THE MIND.

E. TrVhich may "be thus illustrated schematically:-

In the universal	The essence or the very nature of the thing	OBJECTIVE CONCEPT	PORliAL CONCEPT
are to be distinguished	Universal existence.		
	IN MIND		

- C. THE QUESTION is:
  - a. Whether the NATURE, which as universal exists in.the mind, has also OUTSIDE THE MIND, another UNIVERSAL existence?
  - b. Or, in other words: Whether the universal represents something REAL not only as regards the nature represented but.also AS REGARDS THE UNIVERSAL EXISTEN9E?

94. PLATONIC REALISM: To this question Plato, answers that: Uuniversals exist AS UNrVSRALS OUTSIDE THE THING, THEtSELVES.

A. For Plato posited subsistent IDEAS, or incorruptible, eternal, forms, transcending the matter of things, which forms nevertheless \would in some way be participated by matter.

- B. But wrongly does he assert this:
  - a. For when ho says that we immediately apprehend these subsistent
  - b. He contradicts the evident testimony of consciousness, which^ teaches that we conceive natures as abstracted from singulars^ as said above.

95. CAMPELLIAN REALISM: Nor can it be said, according to pother forn^.of realism, Attributed to William of Champeaux (1072-1121), that the nature exists AS UNIVERSAL IN SINGULAR THINGS, and thus is not multiplied in individuals of the same species, but is NTOCBRICALLY ONE, and the same in them all.

- A. This doctrine, at least as regards its substance, was taught by the NEO-PLATONI3TS, by HEGEL, and by SCHELLING:
  - a. According to whom singulars are only phenomenal apparitions of a universal nature.
  - b. Which doctrine is monistic.

B. Nor does the teaching of Scotus lack some affinity with this doctrine.

- a. Foi':
  - a1. Although he rejects monism;
  - a2. His teaching scarcely avoids the seed of monism, inasmuch as he teaches, IH REALITY if not in word, that universals exist AS UNIVERSAL in singular things and ARE NOT IDENTIFIED with individuals.
  - b. Wherefore:
    - b1. Although he says that the universal is multiplied in individuals; - whereby he avoids monism - :
    - b2. He leaves this multiplication insufficiently explained.

C. But it is false to say that natures are not identified with individuals.

- a. The SIGN of this is, that the universal represents the nature as predicable of singulars.
- b. But a nature which is represented as predicable of singulars, must be identified with them: since for the truth of affirmative predication is required strict identity in the -real between predicate and subject.

96. NECESSITY OF ADMITTING ARISTOTELICO-THOMISTIC REALISM: Therefore;

A. Those forms (Platonic and Campellian) of EXAGGERATED REALISM, are to be rejected.

B. And the Aristotelico-Thomistic doctrine of MODERATE REALISM is to be admitted, according to which:

- a. THE UNIVERSAL does not exist as universal save in the mind, but in things as singular:
  - b. Wherefore THE UNIVERSAL IS DEPICTED;
    - b1. A NATURE ABSTRACTED FROM SINGULARS, IDENTIFIED WITH THEM AND MULTIPLIED WITH THEM;
    - b2. Or, more briefly; ONE (one nature) IN MANY (existing as singular in many individuals) AND OF MANY (predicable of many individuals).

C. Hence it appears that, as said above (n.85 B.b.), the universal differs from the common which IS NOT MULTIPLIED with individuals: as the divine nature is common to three persons.

D. But this universal nature;

- a. according as it exists in the real as singular, is the MATERIAL universal, i.e. the matter of the universal;
- b. but according as it is abstract.. is the FUNDAMENTAL universal, inasmuch as, as abstract, it is capable of attribution to many subjects, i.e. it is the foundation of attribution;
- c. but according as it is actually considered as predicable of many subjects, it is the FORMAL or LOGICAL universal. (Cf. Perihermeneias, Lib. I, c.VII, lect.X. ).

E. In order the more profoundly to understand these things, which are of the highest importance, we must in each thing distinguish:

- a. The essence or nature and its existence;
- b. And acknowledge that the existence is in the real singular, but in the mind universal (intentionally).
- c. And that the nature abstracted from all existence is neither properly singular nor properly universal.
- d. But that the nature (essence) as it exists in the mind through abstraction is universal, and that in virtue of this existence of it in the mind is had the proximate foundation of the intention both of universality or of BE-ING in many and of predicability or of BE-ING PREDICATED of many.

P. Therefore the universal;

- a. According as it designates the THING CONCEIVED or the NATURE abstracted by the mind, is called the METAPHYSICAL universal or is REAL-being, which is treated of by the metaphysician or the natural philosopher.
- b. According as it designates the MODE OF CONCEIVING, that is, the nature as respecting inferiors, of which it can be predicated, is called the LOGICAL universal, or is CONCEPTUAL being (ens rationis - thoughty being) OF SECOND INTENTION. which is treated of by the logician.

97\* DOCTRINE CONTRAST: From what has been said the following summary contrast of doctrines is gathered:-

Doctrines regarding the nature of the universal: The universal is	Merely ONE NAME whereby many singulars are named together: to which name corresponds neither any universal concept nor any universal thing;	Which doctrine is NOMINALISM.
	Or also ONE CONCEPT, universal indeed, but to which no universal reality corresponds, and which accordingly is a mere figment of the mind:	Which has been rejected above (n.91).
	Or a REALITY as well as a name and a concept; which universal reality is:	Which doctrine is CONCEPTUALISM.
	Outside singular things:	Which has been rejected above (n.91)-
	Within singular things:	Which doctrine is PLATONIC EXAGGERATED REALISM.
	But is not multiplied in them:	Which has been rejected above (n. 94).
		Which doctrine is CAMPELLIAN EXAGGERATED REALISM.
		Which has been rejected above (n.95)*
	and is multiplied in them:	Which doctrine is the MODERATE REALISM of Aristotle and St. Thomas.
		Which has been proved above (nn.87, 91, 93, 96).

ARTICLE FIVE.

NATURE OF PREDICABILITY,

98. CONCLUSION: It follows from what has been said, as the following considerations (nn.99~100) will make clear, that: PREDICABILITY CONSISTS IN A FORMAL RELATION (relatio rationis) OF A UNIVERSAL NATURE TO MANY IN BE-ING PREDICATED. AND IS AS IT IS A CERTAIN PROPERTY OF UNIVERSALITY OR OF APTITUDE TO BE IN MANY.

99. NATURE OF PREDICABILITY; For;

- A. Predicability, as is manifest from its name, is the aptitude which a universal nature has to be predicated of many.
- B. But this aptitude is a conceptual relation (relatio rationis thoughty relation) of a universal nature to many in be-ing predicated.
- C. Therefore predicability is the very essence of the LOGICAL, UNIVERSAL.

100. PROXIMATE FOUNDATION OF PREDICABILITY: Moreover the proximate foundation of predicability is the INTENTION OF UNIVERSALITY.

- A. For:
- a. Just as actual predication is based upon actual identity of subject and predicate,
  - b. So predicability, or aptitude to be predicated, is based on aptitude to  $\wedge$  in many, or in the intention of universality.

B. Therefore predicability follows universality, and is, as it were, a certain property of universality. (Cf. John of St. Thomas: *Cursus Philosophicus*, Logica, I, p. 336 b.)

SCHEMATIC SUMMARY.

101. SCHEMATIC RECAPITULATION: The contents of the foregoing chapter may be thus schematically summarized:-

- NOMINALISM: which says that the universal is a mere voice (animal noise).
- denied by CONCEPTUALISM: which says that the universal is a figment of mind.

The Universal is something REAL or the NATURE OF A THING	is not UNIVERSAL (as exaggerated realism contends.)	whether outside the thing in itself, as Plato contends.
	really existing	Or inside the thing, as William of Champeaux contends.
	But is SINGULAR IN THE THING:	Which is the doctrine of MODERATE REALISM.
Which, if it be considered		Which doctrine is taught by Aristotle and St. Thomas.
		And is called the MATERIAL UNIVERSAL.
	and also from mental existence	Neither is universal.
As ABSTRACTED from real existence		Nor is singular.
	neither	AS REGARDS THING CONSIDERED.
	itself	Then it is the METAPHYSICAL UNIVERSAL.
	but not from mental existence. is universal: and can be considered	Then the intention of universality is had.
		Is apt to BE in many
	relatively to inferior OR AS REGARDS MODE OF CONCEIVING:	And then it is the fundamental
		Which is aptitude for predication,
		And then it is the LOGICAL UNIVERSAL.

CHAPTER SIX.

THE UNIVERSAL CONSIDERED RELATIVE.Y TO ITS INFERIORS,  
OR THE DISTINCTION OP HET.APHYSICAL DEGREES.

102. ORDER OP PROCEDURE: This chapter:

- A. Will:
- a. First, explain the question which calls lor solution. ^
  - b. Secondly, expose and prove the solution thereof; and indeed:
    - bx. In the first place, by showing that between metaphysical degrees there is no distinction on the part of the thing.
    - b2. In the second place, by showing that the distinction^between^metaplisyical degrees is not'a distinction of name only, but of concept.

B. Hence the following order:-		
Explanation of the question		Article one.
On the dis- tinction of metaphysical degrees:	The distinction is not on the part of the	
	<b>thing...</b>	Article two.
Solution of the question		
Nor is it merely on the part of the name, but is on the part of the		
<b>concept.</b>		Article three

ARTICLE ONE.

THE QUESTION.

103. WHICH IS THE QUESTION: So far we have considered the universal in itself. Yet we have said that the logical universal ap ^ be predicated of inferiors. Now the metaphysical universal, vAich is the foundation of predicability, is to be considered'relatively to the subject whereof it can be predicated.

A. Already indeed we know that it is identified, AS REGARDS TIE THING REPRESENTED, with the singular (n.96).

B. Wherefrom we can at once conclude that, if diverse essential universals- are predicated of the same subject, they are all identified with the subject.

C. But the question arises: WHICH KIND OP DISTINCTION IS THE^ BET^ffEI^ THESE DIVERSE PREDICATES?

104. GENERIC, DIFFERENTIAL AND INFERIOR PREDICATES: Let us take this example: "Peter is a substance, a body, an animate thing, an anima\_, a man." Or this example: "Peter is a composite, living, sgnsrLIZg> rational being."

A. NOTE that each predicate of the latter example contracts a predicate of the former example, to form the following predicate:-

^ ^ SUBSTMCE

substani                      composite              =              BODY

body                              living                      = \_ ^<;^rMATE THING

animate thing +              sensitive

animal ^              +              rational              =              MAN

B. Now:

- a. The first series of predicates to be contracted by the second series is called a series of genera.
- b. But the second, contracing, series is called a series of differences.

C. NOTE lastly that the series of contrahends (the first series) consists of superior concepts, which, when contracted by the differences, become inferior concepts.

105. QUESTION OP IffiTAPHYSICAL DEGREES: Therefore the question to be solved - to wit, concerning the NATURE OF THE DISTINCTION between these predicates of the two series attributed to the same subject' (Peter), - is called the question of tCETAFHYSICAL DEGRESS:

A. It is called the question of DEGREES indeed, because it is about superior and inferior concepts by which, as BY STEPS OR DEGREES, we ascend and descend in the order of concepts.

B. And of METAPHYSICAL degrees, because it is question of metaphysical universal<sup>3</sup>.

## /iRTICLE TWO.

NO DISTINCTION ON THE PART OP THING BETV/EEN METAPHYSICAL DEGREES.

106. NO REAL DISTINCTION: That' there is not REAL DISTINCTION between metaphysical degrees, or distinction between objects diverse on the part of the thing, independently of the consideration of the mind, is clear fran what has been said above on the nature of the universal (nn. 92-97).

A. For each degree v.g. substance, body, etc, is identified with the individual, v.g. Peter, because universal exist on the part of thing as singular, i.e. identified with the individual.

a. But those which are identified with one individual, are really identified with each other.

b. And thus 'substance' and 'body' cannot be identified with Peter without substance and body being identified with each other.

B. Nop can this conclusion be denied unless it be admitted that that-whereby SUBSTANCE is formally constituted really differs from that whereby corporeity, or life, or animality, or rationality, is formally constituted.

a. But, as we see in natural philosophy, there is in one nature one sole principle whereby it is formally constituted substance, and body, and living, and animal, and man.

b. Wherefore no one can sustain real distinction of\*metaphysical.. degrees, unless he:

- bl. admits a plurality of formal essential principles in one na-ture,
- b2. or denies that universals are identified with the individual.



107. OPPOSITION BETWEEN SCOTUS AND ST. THOMAS; In Scotus's teaching, according to which metaphysical degrees are distinguished in the part of thing (in the real), this conclusion is connected, not with the doctrine of plurality of forms, but with the denial of identity on the part of thing of the universal and the individual.

A. Scotus affirms that this distinction on the part of thing is not real, but actual-formal.

a. Scotus, IN ORDER TO SAVE HIS DOCTRINE AGAINST THE DANGER OF CONCEPTUALISM, was led to a twofold distinction on the part of thing, i. e. independently of the consideration of the mind, to wit:

a1. Real distinction between separables;  
a2. And actual-formal distinction, which lies between two formalities of the same thing, or, in other words, between inseparables.

b. For, having admitted the univocity of abstract being, in order to avoid pantheism, he taught that concrete things are analogous.

b1. He was obliged therefore to oppose the abstract order to the concrete order, or the order of being to the order of being.

b2. But from this opposition logically follows conceptualism, which however Scotus avoided by the aid of the principle of exaggerated realism according to which there must necessarily correspond to every diversity of concepts an actual distinction in thing:

b2a. not indeed between diverse things.

b2b. but between DIVERSE FORMALITIES of the same thing.

b3. This distinction he calls ACTUAL FORMAL.

B. HOWEVER IT IS NOT TO BE THOUGHT that, because Scotus real distinction to separables, we are confronted with a mere quarrel about words. In order to make it clear that the opposition between Scotus and St Thomas is not a mere difference of terminology, compare briefly the doctrine of these two masters. For the Scotist doctrine of actual-formal distinction extends itself beyond the ambit of the real distinction propounded by St Thomas

3.\* For

a1. whereas St Thomas under the name 'real distinction' intends to designate:

ala. every distinction on the part of thing,

alb. or, in other words, every distinction having an actual foundation in thing;

a2. Scotus,

a2a. not distinguishing between:

a2a1. ACTUAL foundation in thing, whereto corresponds real distinction,

a2a2. and VIRTUAL foundation in thing (i.e. not distinction in thing but only the power or virtue of engendering a conceptual diversity), whereto corresponds only mental distinction (distinctio rationis),

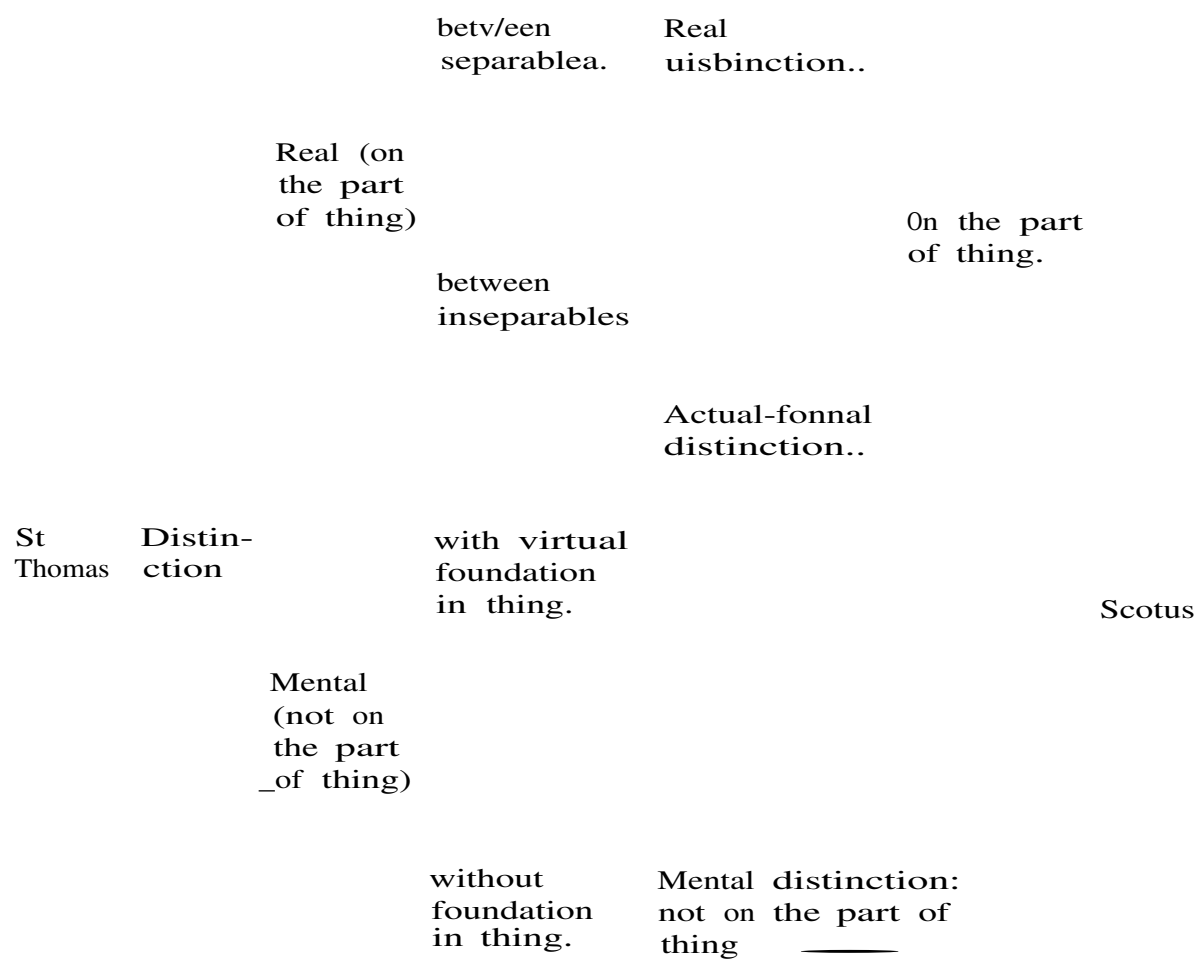
a2b. under the name of actual-formal distinction, designates.

a2b1. not only real distinction between inseparables,

a2b2. but also mental distinction with virtual foundation in thing, whereto however he attributes actual foundation in thing.

a3. Whence it is clear that the dispute is not merely about words, but is about REALITY.

b. This doctrinal diversity between Scotus and St Thomas may be thus schematically illustrated:-



But Scotus cannot sustain this actual-formal distinction save by denying the identity on the part of thing of the universal and the individual whereof the universal is predicated.

- c1. This notwithstanding - though illogically - Scotus holds that the universal is multiplied in individuals; aind this in order to:
  - cla. save the truth of predication,
  - clb. and avoid monism.
- c2. For if the specific nature were actually distinguished on the part of thing from the numeric difference, it is impossible to see how the nature could be numerically multiplied, since the numeric difference is the principle of the multiplicity of the specific nature.
- c3. Scotus
  - c3a. has recourse to some principle of infra-numeric multiplicity;
  - c3b. but what this principle is, is scarcely intelligible.

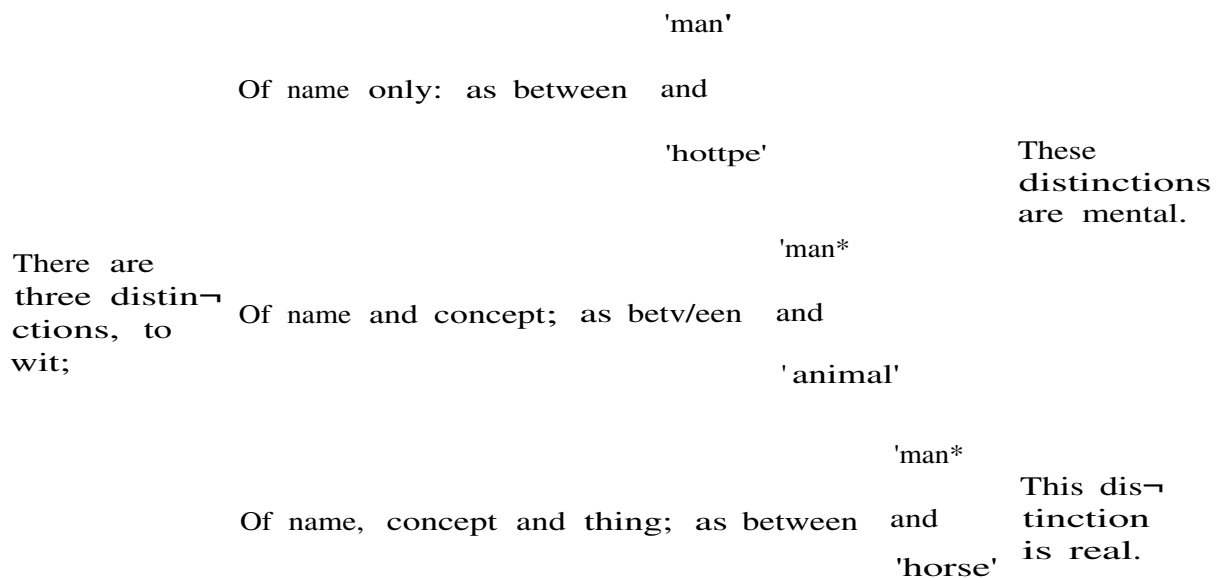
ARTICLE THREE.

DISTINCTION BEFA'EEN T-CSTAPHYSICAL DEGREES IS OP CONCEPT. NOT OF NAME ONLY.

108. DISTINCTION OP NAME AND DISTINCTION OP CONCEPT: From this that metaphysical degrees are not distinct on the part of thing, it cannot be concluded that between them there is utter identity, so that the distinction between them would be no more than a distinction of name.

- A. For, as we have said above, a term i-s-a sign of-a thing, by the medium of the concept.
  - a. Therefore there can be THREE distinctions, to wit:
    - a1. of name only; as between 'man' and 'horame'.
    - a2. of name and concept, as between 'man' and 'animal';
    - a3. of name, concept and thing, as between.^'man' and 'horse-'.

- b. Of these distinctions:  
 b1. the first and second are mental distinctions (distinctiones rationis)  
 b2. while the third is real distinction.  
 c. Which may be thus illustrated schematically:-



- B. The distinction of metaphysical degrees pertains not to distinction of name only, but to distinction of name and concept, as is thus clear;  
 a. Between the concepts 'substance' and 'body' there is indeed a diversity of comprehension: for they are degrees, or, in other words, superior and inferior concepts.  
 b. Likewise between some predicate, (v. g. 'animal'), and its specific difference (v.g. 'rational'), there is also diversity of comprehension.

109. THIS DISTINCTION HAS A VIRTUAL FOUNDATION IN THING; However, it is to be noted that this distinction, although it is a distinction of mind, not of thing, differs from a simple distinction of name which is conventional (ad placitum) in this, that it depends upon the thing, which the comprehension of the concept represents.

A. Not indeed in the thing is the distinction found: for if it were found in the thing it would be a real distinction, not a mental distinction.

B. Yet the THING offers a foundation for a diversity of concepts, INASMUCH AS IT IS TOO PERFECT TO BE EXHAUSTED BY ONE GENERALITY OF OUR LIMITED FACULTY, which is the most imperfect of all intellects. Thus, because our intellect cannot by one single concept perfectly understand what man is, it must from that same thing which man is, abstract diverse concepts: to wit, the concepts of substance, of body, of living, of animal, or rational.

a. This distinction, lest it be confused with distinction of name only. or. in other words, with UNBASED MENTAL DISTINCTION (distinction ad placitum), is called a BASED MENTAL DISTINCTION or MENTAL DISTINCTION-WITH FOUNDATION IN THE REAL

- b. But to distinguish it on the other hand from REAL distinction,  
 - which, being itself IN THING, has an ACTUAL foundation in the real,  
 - it is called also a mental distinction with VIRTUAL foundation in the real; 'virtual', that is: /  
 without distinction in thing, 'virtual' /  
 b2. but differing in the thing perfection which has the virtue or power of engendering many distinct concepts of this thing.

110. THIS DISTINCTION IS A MAJOR BASED MENTAL DISTINCTION: But if metaphysical degrees are compared to each other, it will be found

that the concepts whereby they are distinguished are so diverse that one (v.g. 'man\*) adds something objective (v.g. 'rational\*). which IS NOT ACTUALLY in the superior concept (v.g. in 'animal\*).

A. And therefore the based mental distinction between metaphysical degrees is based on OBJECTIVE PRECISTION. whereby the thing is conceived inadequately, i.e. not totally as regards all its predicates, but with the omission of some. This distinction is called a MAJOR BASED MENTAL DISTINCTION.

B. And it gets this name in order that it may be distinguished from another based mental distinction which is rightly called MINOR, because the foundation of the distinction is less.

a. For in this other based mental distinction, which is verified, for example, between a defined and its definition (v.g. between 'man\* and 'rational animal\*), and between a metaphysical essence and its metaphysical properties (v.g. between 'man\* and 'talky\*. between 'God\* and 'almighty\*. between 'being\* and 'true\*). there is no objective precision between the concepts, but FORMAL precision only:

b. For each of the two concepts (v.g. 'man\* and 'rational animal\* attains the thing according to all its predicates:

b1. but one of them ('man\*) attains them CONFUSEDLY,

b2. whereas the other ('rational animal\*) attains them DISTINCTLY.

C. In order the better to understand which, it is to be noted that PRECISION is the same as separation or distinction effectively taken.

a. For distinction can be taken:

a1. Effectively, for the very act of distinguishing;

a2. Or formally, for the very plurality itself which is the distinction or distinctness.

a3. Or relatively, for the relation which follows plurality inasmuch as those which are distinct are referred to each other as distinct.

b. But PRECISION (i.e., distinction effectively taken) is twofold, to wit:

b1. PHYSICAL precision, as when one is really separated from another, (v.g. a branch is lopped from a tree).

b2. INTENTIONAL or- cognoscitive precision, which is had inasmuch as one is separated from another in understanding and by understanding. Which again is twofold, to wit:

b2a. FORMAL precision, whereby knowledge attains a whole object as regards all its predicates, yet in such fashion that one predicate is clearly and distinctly apprehended while the others are confusedly apprehended.

b2a1. Thus of the one same thing 'peter\*:

b2a1a. one concept distinctly attains this predicate 'man\*. while it confusedly attains the other predicates such as 'animal\*. 'rational\*, 'talky\*. 'laughy\*. 'social\* etc.

b2a1b. and another concept distinctly attains this predicate 'rational animal\*. while only confusedly does it attain the other predicates 'talky\*. 'laughy\*. 'social\* etc.

b2a1c. and another concept distinctly attains this predicate 'laughy\*. while only confusedly does it attain the predicates 'rational animal\*. 'talky\*. 'social\* etc.

b2a1d. and another concept distinctly attains this predicate 'talky\*. while only confusedly does it attain the predicates 'rational animal\*. 'laughy\*. 'social\* etc.

b2a2. By formal precision, as is clear from what has been said above, arises the distinction which is called MINOR BASED MENTAL DISTINCTION.

b2b. OBJECTIVE precision, whereby one predicate is attained, the others being simply omitted.

b2b1. Thus of the same thing 'Peter\*. the concept 'animal\* attains the one predicate 'animal\* alone, simply omitting (not even confusedly attaining) the predicates 'man\* 'rational\*. 'talky\*. 'laughy\*. 'social\* etc.

b2b2. It is clear from what has been said above that it is by objective precision that the distinction which is called MAJOR BASED MENTAL DISTINCTION arises.

c. Therefore the diverse precisions are distinguished as thus shovm schematically;

Either REAL; vhen one is really separated from another.

Precision  
is

either FORMAL: when knowledge attains a thing according to all its predicates, yet in such wise that one predicate is distinctly attained vMle the others are only confusedly apprehended.  
  
or OBJECTIVE; when knowledge attains one predicate of a thing; its other predicates being simply omitted.

or INTEI^TIONAL; when one is separated from another in intellect and by intellect: and this is:

111. SCHEMATIC EXFOSI-nON OP THE DIVERSE DISTINCTIONS: Prom what has been said it is clear:  
  
A. That distinction is thus divided:-

Which is DISTINCTION ACCORDING TO  
NAJffi ONLY.  
Either UNBASED; Whereof the cause is GOOD-PLEASURE.

Either MENTAL. .  
i. e.  
DISTIN-  
CTION  
NOT EX-  
ISTING  
ON THE  
PART OP  
THING;  
DISTINCTION; which  
i.e. LACK OP is  
IDENTITY;  
which is  
  
Or BASED, i.  
DISTINCTION  
BETWEEN WO  
CONCEPTS OP  
THE SAME  
THING; and  
this is  
  
Either  
MINOR;  
  
Or  
MAJOR:  
  
mich is DISTINCTION BETWEEN TWO CONCEPTS OP THE SAME THING, HAVING INDEED THE SAME ACTUAL CONTENT, BTJT DIFFERING ACCORDIlg AS ONE BESPEAKS B^HiICITLY OR ^ CONFUSEDLY T^HAT THE OTHER BESPEAKS EXPLICITLY OR DISTINCTLY.  
V/hereof the cause is FORMAL PRECISION.  
  
Which is DISTINCTION BETWEEN TWO CONCEPTS OP THE SAME THING, YET HAVING DIVERSE ACTUAL CONTENT. , ;  
Whereof the cause is OBJECTIVE IRECISION.

(which is DISTINCTION EXISTING ON THE PART OP THING.  
Or REAL;  
is NOT CAUSED by the mind.  
Which  
but is POUND in the real by the mind.

- B. Which may indeed be schematically illustrated in another way, thus:-

DISTINCTION

SCHEMATIC SUMMARY.

112. SCHEMATIC SUMMARY: The contents of the foregoing chapter may be thus schematically summarized:-

Their NOTION: Concepts of diverse degrees of universality predicated of the same subject.

Metaphysical degrees:	neither really.	
	not on the part of thing, and indeed	
Their DISTINCTION: they are distinguished —	nor actually~formally (as says Scotus).	
	not unhasod (according to distinct- ion of nature only).	
Mental distinction and indeed	but by	
	distinction	not minor (according to formal precision).
but BASED, and indeed		*
		but MAJOR (according to objective precision).

## SECTION THREE.

## PREDICABILITY ITSELF IN SPECIAL.

113« ORDER OF PROCEDURE: Since predicability is the property whereby a universal nature respects inferiors;

A. V/ien we are dealing v/ith predicability the question occurs regarding the diverse manners in which a nat'jre can respect inferiors.

B. But the MANNERS or MODES of predicability do not all have themselves in the same way towards their inferiors.

a. Thus, v.g. 'man' respects its inferiors, 'Peter', 'Paul' and 'James' IN THE SAME WAY, that is, to signify the same; this is called UNIVOCAL predicability.

b. But 'being' is said of 'God', of 'creature', of 'substance' and of 'accident' to signify diverse significates;

b1. Indeed it is said of:

b1a. 'God' to signify 'being FROM SELF';

b1b. 'creature' to signify 'being FROM OTHER';

b1c. 'substance' to signify 'being IN SELF';

'accident' to signify 'being IN OTHER'.

b2. This mode of predicability is called ANALOGOUS predicability,

C. Therefore this section will treat in turn;

First. UNIVOCAL predicability.

Secondly. ANALOGOUS predicability,

D. Hence the following order:-

On univocal predicability....Sub-section one.

On predicability  
in itself in  
special; indeed:

On analogous predicability.Sub-section two.

## SUB-SECTION ONE.

## UNIVOCAL PREDICABILITY.

114- ORDER OF PROCEDURE: For the study of univocal predicability:

A. It is to be NOTED;

a. That predicability, though it is a property of the metaphysical universal, can be considered abstractly, or, as is said, in signified act (in actu signato), prescindendo from that whereof it is the property,

b. That nevertheless it cannot be exercised independently of that whereof it is the property.

B. Therefore this sub-section will treat:

a. First, of univocal predicability IN SIGNIFIED ACT.

b. Secondly, of univocal predicability IN EXERCISED ACT.

C. Hence the following order:-

On univocal  
predicability

in SIGNIFIED **act.** Chapter seven.

in EXERCISED **act.** Chapter eight.

# CHAPTER SEVEN.

## UNIVOCAL PREDICABILITY IN SIGNIFIED ACT, OR THE PREDICABLES.

115. **ORDER OF PROCEDURE:** This chapter will consider;

- A. Four things, to wit;
  - a. First, the general division of predicables,
  - b. Secondly, the predicables in special.
  - Thirdly, the individual.
  - d. Fourthly, the ordering of the predicables.

B. Hence the following order:-

General division of predicables.....Article one.

The predicables in special...Article two.

predicables; **individual...Article three.**

The ordering of the predicables....Article four.

## ARTICLE ONE.

### GENERAL DIVISION OF PREDICABLES.

116. **NOTION OF PREDICABLES:** Predicability, as we have said above (nn.98-100), is the very essence of the logical universal, and is a property of the metaphysical universal.

- A. Therefore:
  - a. in dealing with predicability,
  - b. we must deal with its diverse modes, or the diverse mental relations of a nature to its inferiors.

B. But these DIVERSE MODES OF PREDICABILITY, or DIVERSE MENTAL RELATIONS OF A NATURE TO INFERIORS, are called the PREDICABLES.

117. **THREE ESSENTIAL PREDICABLES:** In the preceding chapter already, where metaphysical degrees were discussed, something was said about certain modes of predicability (n.104).

- A. For there;
  - a. Mention was made of:
    - a1. CONTRAHEND concepts, v.g. 'subalternance', 'animal';
    - a2. CONTRACTING concepts, v.g. 'compound', 'rational';
    - a3. and CONTRACTED concepts, v.g. 'body', 'man'.
  - b. For:
    - b1. 'Substance' is contracted by 'compound' into 'body';
    - b2. and 'animal' is contracted by 'rational' into 'man'.

B. These concepts which thus respect inferiors (v.g. 'Paul' as befitting them, because they signify its ESSENCE in diverse ways, constitute



SO MANY predicables ^ there are DIVBRSB YAYS of respecting the essence of t1^ . inferior.

- a. Thus, v. g. 'animal\* . which signifies the CONTRAHBND or DETEBGNAND •part of the essence, is called a GENUS;
- b. But 'rational\* . which signifies the CONTRACTING, DETERMINING, Eg-jj of the essence, is called SPECIFIC DIFFERENCE;
- c. And 'man', which signifies the vAiolo essence of Paul:
  - c1. is called the SPECIES.
  - c2. and it results from the determination of the genus ('animal') by the specific difference' ('rational').

116. TWO PRAETER-ESSENTIAL PREDICABLES: But besides those three njodes\_ , there are OTNER modes in v/hich some predicate may befit a subject.

A. Besides those attributes which ossentially befit 'Peter' or 'Paiiii.' •

- a. there are o'ther attributes whereby they differ ACCIDENTALLY from 6Sicl^ other•
- b. and these are accidents CONTINGEtTT to their (human) nature; for if they were not contingent, but necessary, then;
  - b1. they would befit each of the two,
  - b2. and so would not distinguish them.
- c. And this constitutes the fourth mode, which is FREDICABLE ACCIDENT.

B. But still other attributes are found in 'Peter' and 'Riul', which befit them:

- a. although they do not belong to their essence,
- b. and yet are common to them and to all men, because they are WECEBRARY to their nature.
- c. And this constitutes the fifth mode, which is PROPER accident.

119. FIVE PREDICABLES ONLY: Nor are there, besides those five, any OTH^ predicables:

A. For the division given is complete.

B. As is clear from the following scheme;-

Some predicate IS PREDICABLE of a subject. because it represents	its ESSENCE	whether as regards the part	determinand,	GENUS.
			determinings	SPECIFIC DIFFERENpE.
		or as regards the whole		SPECIES.
	some ACCIDENT SUPERADDED TO THE ESSENCE	whether flowing NECESSARILY from the very essence.		PROPER
		or CONTINGENTLY..		PREDICABLE ACCIDETIT.

ARTICLE TWO.

THE PREDICABLES IN SPECIAL.

120.. CONSTRUCTION OP THEIR,DEJ'INITIONS: Each predicable, insofar as it is a logical universal, can respect many inferiors beneath it:

A. And therefore the definition of each predicable begins with these words: "a universal respecting many":

B. To which words must be added other words 'bespeaking' the specific difference of each predicable respectively.

121. GENUS: Since, as said above (nn. 117, 119), genus is a predicable to be contracted (contrahend) to constitute a species:

A. A genus respects many species beneath it.

B. Then again, it belongs to the essence, or, as it is, called, the quiddity, of the species.

C. Therefore GENUS is defined: A UNIVERSAL RESPECTING AS REGARDS, WHAT THEY ARE, MANY DISTINCT ACCORDING TO SPECIES - "UNIVERSALE FLURA RESPICIENS SPECIE DISTICTA IN QUID".

a. But what genus expresses of the essence of its inferiors, will appear from the consideration of this example: '\*Man is an animal\*.

al. The complete definition of man is '\*rational animal':

ala. The difference (rational) is not included in 'animal'; for otherwise:

alal. every animal would be rational,

ala2. and there would be no brute.

alb. Nevertheless animal has something with respect to rationality, which plant has not, to wit, potency to receive rationality.

ale. And therefore it is said, that genus is the POTENTIAL PART of a species:

a1d. "PART" indeed, because it has not the differences;

alc2. "POTENTIAL", because it has potency to receive them.

a2. However, notwithstanding this, man is an animal, NOT, AS REGARDS A PART OF ONLY, BUT AS REGARDS THE WHOLE.

a2a. For there is no real distinction between the man and the animal, as was said above, when it was question of metaphysical degrees (n. 100).

a2b. Wherefore it can rightly be said that genus is a POTENTIAL WHOLE:

a2bl. "WHOLE" indeed, because it represents the whole essence of its inferiors;

a2b2. But "POTENTIAL", because it represents that whole essence indeterminately and as a determinand to be determined by the difference.

b. As regards the predicability of inferiors;

b1. Genus directly respects the species, into the definition of which it enters, (as 'animal' enters into the definition of the species 'man').

b2. But indirectly it respects the difference:

b2a. That it respects it indeed, appears from this, that it can be said that "every rational (being) is an animal".

b2b. But that it respects it only indirectly, to wit, only by the medium of the species, appears from this, that animality befits, rationality only inasmuch as it is the genus of the species whereof rationality is the difference.

c. However, CARE IS TO BE TAKEN AGAINST CONFUSING direct predicability with immediate predicability (which latter is also called predicability essentially and primarily - 'per se primo').

clm. Thus:

cla. 'Substance' and 'animal' are both predicable directly of 'man':

clal. yet 'animal' immediately: in other words, man is essentially and primarily (per se primo) an animal;

cla2. but 'substance' mediately only: in other words, man is essentially but not primarily (per se secundum non primo) a substance; for 'substance' is predicable of man only by the medium of several other genera (to wit, 'body' and 'animate' and 'animal').

clb. Accordingly:

clbl. 'Animal' is called the PROXIMATE or LOWEST genus;

clb2. But 'substance' is called a REMOTE genus.

c2. But:

c2a. when above some remote genus there is no other genus, this genus is called the SUPREME genus.

c2b. Thus 'substance' is a SUPREME genus.

»{k Sr-I^CISS: It Is to 1

A. ¶tvat »4«aco apwol^w le a 44o jtfAaiMc  
difference;

- a. species is found under ge^nus, and therefore species may be defined:  
not only relatively to its inferiors, i.e. individuals,  
but also relatively to genus.

b. But:

b1. the former mode of defining it alone befits species AS IT IS  
PREDICABLE, v.g. "Peter is a n\8^\_".

b2. For the latter consideration is a consideration of species AS IT  
IS SUBJECTED TO GENUS, and therefore thus taken it is SUBJECTIBLE: "v.g.  
"Man is an animal".

B. Therefore SPECIES is defined as a predicable; A UNIVERSAL RESPECTING  
MANY INFERIORS AND BEFITTING THEM AS WHAT THEY ARE COMPLETELY  
"UNIVERSALE RESPICIENS PLURA INTERIORA ET EIS. CON^VENIENS UT QUID COMPLETE".

C. NOTE however, that tMs definition befits:

a. only corporal species,

b. but not spiritual species, in which, since the specific difference  
is also together the numeric difference, there is in each ^ecies only one  
individual, according as Thomists teach that "among the angels, how many  
individuals there are, so many species there are - apud angelos, quot  
sunt individui, tot sunt species."

123 SPECIFIC DIFFERENCE: It is to be observed;

A. That difference;

a. like genus, rejects one part of an essence, respecting its  
inferiors as regards what they are, but incompletely.

b. But;

b1. whereas genus respects the determinable part of the essence,

b2. difference respects the determining part.

B. But:

a. Since by its difference, a species has determination, the term  
'quality' (quale) is borrowed:

a1. transferring to the essence that which is properly the character  
of quality;

a2. for quality is properly the determinative accident.

b. And therefore DIFFERENCE is defined; A UNIVERSAL RESPECTING ITS  
INFERIORS AS BEFITTING THEM AS REGARDS ESSENTIAL QUALITY - "UNIVERSALE  
RESPICIENS SUA INFERIORA TAMOUAM CON^VENIENS n^LIS IN QUALE QUID".

124. PROPER AND PREDICABLE ACCIDENT: It is to be considered:

A. Since proper and accident are qualities (sorts/esses) SUPERADDED  
to the essence, they retain in their definitions the term 'quality' (quale),  
which was already used by transference in the definition of difference.

B. However;

a. The definition of proper ought to note a diversity:

a1. on the one hand, from difference.

a2. and on the other hand, from predicable accident.

b. And accordingly:

b1. The diversity from difference is indicated by the term 'accidental'  
in place of the word 'essential' ('accidentaliter' in place of 'quale').

b2. The diversity from predicable accident is indicated by the term  
'necessary' in place of the term 'contingent' ~T 'necessario' in place of  
'contingenter').

C. Hence the- definitions of the two;

a. PROPER is defined; A UNIVERSAL WHICH IS PREDICATED OF MANY AS  
REGARDS ACCIDENTAL BUT NECESSARY QUALITY - "UNIVERSALE QUOD PRAEDICATUR  
PLURIBUS IN QUALE ACCIDENTALITER SEP NECESSARIO"

b. But ACCIDENT is defined: A UNIVERSAL WHICH IS PREDICATED OF MANY

4?- regards accidental and contingent qualify - "UNIVERSALE QUOD  
\_gE^DICATTJR BE PLIJRIBUS IN

D. But these terms 'necessarily\*' and 'contingently\*' must be rightly understood: for they are said relatively, not to individuals, but to species

a. Thus:

Q-1. \*ma.sculine' or \*feminine\*;

ala. is indeed necessary to the individual, inasmuch:

alal. as it is indeed necessary to Peter' that he be masculine,

ala2. and to Mary that she be feminine,

a2. but it is not necessary to the species, • inasmuch:

a2a, it is not necessary that man be masculine, since man can be feminine, ~

a2b. nor is it necessary that man be feminine, since man can be masculine.

a3. Wherefore 'masculine\*' or 'feminine' is a predicable accident.  
(Cf. In I Periherm, lib. I, c.~1, lect. 10, ed. Leonina, p.48, nota). ~

b. But risible\* (laughy), since it is necessary to human species, because flowing from that species, is proper. However this necessity to the species admits diverse degrees:

b1. Either it flows from the difference:

bla. and therefore befits:

blal. EVERY individual of the species,

bla2. that species ALONE,

bla3. and ALWAYS. “

bib. Thus man is risible, by reason of his rationality (difference),

blc. Then is had a STRICT PROPER.

b2. Or it flows from the genus:

b2a. and then it befits:

b2al. EVERY individual,

b2a2. and ALWAYS.

b2a3. but NOT the species ALONE.

^2b^ 'endowed with senses\* befits EVERY man and ALWAYS, but not because it is by reason of animality (genus) that man has senses.

b2c. Then is had a LESS STRICT PROPER.

b3. But there is still another proper, which approaches nearer to predicable accident:

b3a. And this is a proper which designates a contingent act of some proper: such as 'use speech\*' or 'actually speak\*.

b3b. For:

^5bl. 'have speech\* or 'bQ speechful\* is a proper of man, just as is \*be risible\*;

b3b2. but the act of speaking is an contingent act of this proper.

b3c. And therefore it befits:

b3cl. EVERY individual of the species,

b3c2. and that species ALONE,

b3c3. but NOT ALWAYS.

b3d. And then is had a PROPER BROADLY SO-CAT.T.TiTi-

b4. Of these:

b4a. the first, which is the strict proper, is called a proper SIMPLY (propriura simpliciter).

b4b. But the second, which is the less strict proper, and the third, which is the proper broadly so-called, are called a QUALIFIED proper (proprium secundum quid). — —

b4c. Which is thus illustrated schematically:-

every

either simply or as strict; and then it befits alone,

always.

PROPER  
is taken

every,

either as less strict;  
and then it befits

always,

or under  
qualification:  
and then

not alone.

[every.

or broadly; and then it befits alone,

not always.

E. But it is necessary to DISTINGUISH two properties, to wit, physical property and metaphysical property.

- a. For a PHYSICAL property:
  - a1. is a "real accident consequent upon an essence\*"; (Goudin, Logica Ma.1or, I, disp. I, q.2, a. 7).
  - a2. and accordingly it is really distinct from that essence.
  - a3. And an essence taken as opposed to its physical properties;
    - a3a. is the essence taken as it is in the real without any precision;
    - a3b. and so taken therefore includes everything that is really within it;
    - a3c. and therefore to it belong all metaphysical properties.
  - a4. Thus:
    - a4a. The physical essence of man is compound from specially (humanly) organized body and intellective soul;
    - a4b. and the physical properties of man are, for example, human intellect, human will etc, which are really distinct from that physical essence.
  - ^5\* A physical property is sometimes called also actual property
- b. But a METAPHYSICAL property:
  - b1. is "a certain notion, only mentally distinct from the essence, or the very essence itself insofar as it is the foundation of a physical property." (Goudin, ibid.).
  - b2. And the essence taken as opposed to metaphysical property is the metaphysical essence:
    - b2a. which therefore does not include everything that is really within the physical essence; for it does not include the metaphysical properties;
    - b2b. and;
      - b2b1. though it is really identical with the metaphysical properties,
      - b2b2. yet is mentally distinct from them;
    - b2c. and:
      - b2c1. is the root of them,
      - b2c2. they being consequent - not really, but mentally - upon it;
    - b2d. so that;
      - b2d1. the metaphysical essence is the very thing as primarily conceived or understood,
      - b2d2. while the metaphysical properties are that same thing as consequently conceived or understood,
  - b3. Thus;
    - b3a. The metaphysical essence of man is rational animal;
    - b3b. and the metaphysical properties of man are 'risible' (laughy), 'flebile' (weepy), 'speechful' (talky), 'social', 'progressive', 'economic' (exchangeable), etc.
  - b4. Metaphysical properties are sometimes also called;
    - b4a. attributal properties; (Goudin, ibid.).
    - b4b. or aptitudinal properties (cf. Perrariensis in IV Con.Gent. c.65)^
    - b4c. or radical properties; (John of St Thomas, Cursus, Philos., III, q. 2,a.2).

125. RECAPITULATION AND ILLUSTRATION; Hence:

jL            definitlona of            fiw pfrex3i4a6t)>l«ii            a:api©»IJwe«'\*

	Genus;	A UNIVERSAL RESPECTING AS REGARDS WHAT THEY ARE, MANY DISTINCT ACCORDING TO SPECIES; i.e. a universal-which is predicated so as to say incompletely what the subject is.
	Species;	A UNIVERSAL RESPECTING MANY HJPERIORS AUD BEFITTING THEM AS WHAT THEY ARE CC3>IPLYELY; i.e. a universal which is predicated so as to say completely iidiat the subject is.
Predicable; A DETERMINATE MODE OP PREDICABILITY, or A DETERMINATE MENTAL RELATION OP A NATURE TO INPERIORS: whereof there are five, and five only, to wit:	Difference:	A UNIVERSAL RESPECTING ITS INPERIORS AS BEFITTING THEM AS REGARDS ESSENTIAL QUALITY; i.e. a universal which is predicated so as to say of which sort the subject is essentially.
	Proper:	A UNIVERSAL WHICH IS PREDICATED OP MANY AS REGARDS ACCIDENTAL BUT NECESSARY QUALITY; i.e. a universal which is predicated so as to say of which sort the subject is non-essentially but necessarily.
	Accident;	A UNIVERSAL WHICH IS PREDICATED OP MANY AS REGARDS ACCID5NTAL AND CONTINGENT QUALITY; i*e, a universal which is predicated so as to say of viiich sort the subject is non-essentially and contin- gently.

- B. Which may be thus:
- a. schematically illustrated:-

INFERIOR			SUPERIOR
1_			
SUBJECT		' ' PRED19ATE	PREDICABLE^
"Man	is	an animal"....	..GENUS.
"Peter	is	a <b>man</b> "..	..SPECIES.
"Peter	is	<b>rational</b> ".	...DIFFERENCE.
"Peter	is	<b>social</b> ".....	... PROPER.
"Peter	is	<b>wise</b> "*.. •.	...ACCIDENT.

- b. With regard to which, note;
- b1. That the proper or immediate inferiors constituting the terra which GENUS "respects" (or towards which it has relation as a universal to its immediate or proper inferiors) are species.
- b2. That the inferiors of (most special) SPECIES are individuals.
- b3. That the inferiors of DIFFERENCE are the inferioy^ of the species whereof it is the difference;
- b5a. For, though difference has relation to species,
- b3b. yet;
- b3b1. it has not to species the relation cf universal to inferior,
- b3b2. but the relation of convertible with convertible.
- b4. That the inferiors of PROPER are the inferiors of the species whereof it is proper:
- b4a. For, though proper has relation to species.

- bi+b. yet:  
 b4bl. it has not to species the relation of universal to inferior,  
 b4b2. but the relation of convertible to convertible.  
 b5. That the inferiors of ACCIDENT are individuals.

### ARTICLE THREE.

#### THE INDIVIDUAL.

126. THE INDIVIDUAL IS NOT A PREDICABLE: For:

- A. Just as:  
 a. species is subjected to genus,  
 b. so is the INDIVIDUAL subjected to the species.
- B. But, since it is the ultimate subject,  
 a. of  $\wedge n$  only, to wit, of itself, is it predicable;  
 b. and therefore, having no inferiors, it is not a predicable or logical universal.

127. METAPHYSICAL AND PHYSICAL CONSIDERATION OF THE INDIVIDUAL: It follows that the individual is distinct from others within the same species; for otherwise it would be universal.

- A. Metaphysically the individual is constituted by  $Nili^{\wedge}RIPDIPPPBliSS$ .  
 - as, so to speak, by a lowest metaphysical degree, - whereby the nature is rendered in itself singular.

a. But this numeric difference is not to be confused with the sum of contingent accidents whereby individuals are physically distinguished from each other.

- al. For the nature, which exists in the individual, is identified with it;  
 a2. and is therefore in itself  $STmSTy^{\wedge}TTIALLY$  individual;  
 a3. wherefrom it is clear that it is not by accidents that this nature is individuated. (Cf. General Natural Philosophy, Section 2, chap.8, where the individuation of bodies is treated).

b. But we know this numeric difference, not in itself, but through its empiriological signs or, as they are called, its individuating notes.

bl. For even the specific difference of things we know in most cases, is not in itself, but only negatively; as is shown by this, that we say that a brute is an IRRATIONAL animal.

b2. It is a 'fortiori' (for a still stronger reason) the same with numeric difference: for the individual is ineffable (unpayable), and indeed:

b2a. ineffable on account of its materiality, if it is question of a material individual;

b2b. but ineffable on account of its spirituality, if it is question of other individuals: for we know the spiritual only ANALOGICALLY, as is shown in Psychology.

B. But by the distinction of the individual by means of its individuating notes is obtained the physical consideration of the individual, - the only consideration accessible to us.

a. But these individuating notes, whereof the sum befits one individual only, are only predicable accidents.

- b. These individuating notes are enumerated:  
 bl. In these verses:

gl.

"Forma, fig'o.ra, locus, temims, stirps, patrIa, nomen; '  
"Haec ea sxmt septem, quae non habet unus et alTerT^

b2. Utiicii may be thus translated:

"ITaine, courxtry, rape,  
'Iime, figure, form and place;  
I'liere you have those seven notes,  
VTnich are not the same in this and that."

A5TICLE FOtm.

OOEERIITC- OF THE PBEDICABLES.

12g, TREE OF POEIHRY; In the tree of porphyry, exhibited below, is  
had an example of the ordering of supreme and subaltern genera, and  
species and differences.

A. 'But BOTE:

a. That, as there is shovra. here a tree of Porphyiy in the genus of  
ecbstance, so also there can in like manner be constructed trees in the  
other supreme genera (v.g, quantity, quality, etc), which are likewise '  
divided in the same way by means of differences.

b. That the lo^est or most sjoecial species alone is species in the  
strict sense: of it alone avails the definition of species given above  
(n"T^y.





## CHAPTER EIGHT.

## UNIVOCAL PREDICABILITY IN EXERCISED ACT, OR THE PREDICAMENTS.

129> ORDER OF PROCEDURE: It is to be observed carefully:

A» That the PREDICABLES<sup>A</sup> which are mental beings of second intention (cf. n.11.B), are based on beings of the first intention or REAL beings. But of these real beings wherein the predicables are based, it was not question in the preceding chapter, which considered the relation of predicability of predicate to subject in the abstract.

B. But, dealing with univocal predicability in the concrete:

a. We must enquire:

can EXERCISE the office of predicable?

a2. that is: 'Which are the METAPHYSICAL UNIVERSALS, or real beings', which can be predicated of a subject by way of genus, of species, of difference, of proper, and of predicable accident?

b. These real beings, which are thus univocally predicable in exercised act of their inferiors, are called the PREDICAMENTS or CATEGORIES.

C. Of these we now treat:

a. Dealing:

a1. First, with their nature.

Secondly, with their division.

a3. Thirdly, with their properties called the post-predicaments.

b. Hence the following order:-

[their nature...,

Article one.

On the predicaments Their division..

Article two.

Their properties.

Article three..

## ARTICLE ONE.

## NATURE OF THE PREDICAMENTS.

150. NATURE OF THE PREDICAMENTS: If it be said: 'Substance is a substance\*.

'Paul is a man\*. 'Whiteness is a colour', 'James is big'. 'God is the Creator', the predicates, considered in themselves, according as they are METAPHYSICAL universals, represent REAL natures. But among these universals we find diverse relations.

A. 'Substance' and 'man' are to each other as superior and inferior concepts;

a. For relatively to 'substance'. 'man' is inferior:

a1, for the concept 'man' contains in itself the concept 'substance',

a2. nor have the two the same extension, since not every substance is a man.

b. They both belong to the same category, to wit, that of substance,

B. But the other predicates, to wit, 'colour'. 'creator', 'big\*;

a. have not the relation of superior and inferior concepts,

b. and are said to belong to diverse CATEGORIES of beings; and indeed;

b1. 'colour\*' to the category of QUALITY;

b2. 'creator' to the category of EFFICIENT CAUSE,

b3. 'big' to the category of QUANTITY.

C. But each category gets the name of a supreme predicate:

- a. Thus we have said that 'man' BELONGS to the category of SUBSTANCE;
- b. and 'colour' to the category of QUALITY.

D. These categories are called PREDICAMENTS. But they can be considered in two ways:

- a. In substance, in quality, and in efficient cause;
  - a1. we can consider, just as in man, in colour, and in-creator, the REALITY which they represent;
  - a2. and thus they are metaphysical universals or real beings.
  - a3. Under this aspect, or according as it is taken IN ITSELF, a PREDICAMENT is nothing other than a METAPHYSICAL UNIVERSAL.
- b. But substance, or quality, or quantity;
  - b1. if it is considered RELATIVELY TO INFERIORS (v. g. to 'man', or 'colour', or 'bigness'), or under a logical aspect;
    - b1a. then it is a LOGICAL UNIVERSAL.
    - b1b. and it is nothing other than one of the supreme genera of beings,
    - b1c. or designates one predicable but ACCORDING AS PREDICABILITY IS EXERCISED BY SOME DETERMINATE BEING.
  - b2. Wherefrom it appears that this treatise on the predicaments, according as it is here considered by the logician, is concerned about predicability DIRECTLY EXERCISED.
  - b3. And it also appears:
    - b3a. that the name 'category' better designates this logical aspect,
    - b3b. while the name 'predicament', which is more frequently used to designate both aspects, is more fitting to designate the absolute (or metaphysical) consideration of the metaphysical universal.

131. DIVERSE WAYS OF BELONGING TO A PREDICAMENT: All real beings belong to the predicaments. But diversely:

- A. Beings;
  - a. which are contained beneath a supreme genus:
    - a1. after the manner of a subaltern genus.
    - a2. or of a species,
    - a3. or of an individual,
  - b. or, in other words, beings which are allocated on the straight or central line (the trunk) of a Porphyrian tree,
  - c. belong DIRECTLY to a predicament.

- B. But in two ways may a being belong directly to a predicament, to wit, either non-reductively or reductively:
  - a. NON-REDUCTIVELY indeed belong complete beings, such as 'animal' or 'man', for these are found explicitly on that straight line.
  - But REDUCTIVELY belong incomplete beings, such as 'matter' and 'soul', which are found indeed on that line, but only inasmuch as they are contained implicitly in 'body' and 'animal'.

C. But those which are found on the lateral line (on a branch) of a Porphyrian tree, such as DIFFERENCES, belong only INDIRECTLY or LATERALLY to a predicament, because they can be predicated indirectly of those 'beings' which belong to the straight line.

- D. But complex concepts:
  - a. since they contain several essences,
  - b. pertain to several predicaments.
  - c. Thus 'philosopher';
    - c1. which bespeaks two essences, to wit;
      - c1a. 'man';
      - c1b. and 'philosophical science';
    - c2. pertains to two predicaments, to wit:
      - c2a. to substance,
      - c2b. and to quality.

E. Hence the following scheme:-

either NON-REDUCTIVELY.

either DIRECTLY, and then

Some being inaj/  
belong to a  
predicament

or REDUCTIVELY.

or INDIRECTLY or LATERALLY.

ARTICLE Tiro.

DIVISION OF THE PREDICAMENTS.

132. ORDER OF PROCEDURE: In dealing with the division of the predicaments:

- A. We shall expose:
  - a. First, the ante-predicaments.
  - b. Secondly, the very division of the predicaments.
- B. Hence the following order

On the division of  
the predicaments

The ante-predicaments. Dissertation one.

The division itself. Dissertation two.

DISSERTATION ONE.

THE ANTE-PREDICAMENTS.

133. NOTION OF ANTE-PREDICAMENTS: Before the division of real being into the predicaments:

- A. There are several things which must be premised, since they are necessary for a right distinction and ordering of the predicaments.
- B. These PRE-ARTICLES AND PRE-REQUISITES TO THE ORDERING OF THE PREDICAMENTS are called ANTE-PREDICAMENTS.

134. FIRST ANTE-PREDICAMENT: Let us take these concepts: 'man', 'peter', 'Philosopher', 'colour', 'paternity' and 'similitude', all of which concepts signify some reality, and so are real beings.

- A. But:
  - a. Of each of these 'being' is said according to a signification essentially diverse, but in a secondary fashion the same, or ANALOGICALLY.
  - b. Of 'Peter' 'man' is said according to a same signified character, or UNIVOCALLY.
  - c. 'Colour', 'paternity' and 'man' are distinguished from each other according to signified characters utterly diverse, or EQUIVOCALLY.
  - d. Yet one can be said of another, as 'colour' or 'paternity' of 'man' or of 'Peter', as an ACCIDENT of 'man' or of 'Peter'; and it is called a DENOMINATIVE.

- B. Therefore in the division of the predicaments these are to be distinguished:
  - a. Between superior and inferior concepts: UNIVOCITY.
  - b. Between diverse predicaments towards each other: EQUIVOCITY.
  - c. Between diverse predicaments and being: ANALOGY.

d. Between accidental predicates and those whereof they are predicated:  
DENOMINATION.

C. Something further regarding denomination is here in place:

- a. A denominative;
  - a1. is an ACCIDENTAL predicate:
    - ala. signifying in concrete,
    - alb. that which the predicator, wherefrom it is derived, signifies in abstract.
  - a2. Thus 'Peter\*';
    - a2a. is denominated 'father\*,
    - a2b. (v. which is concrete),
    - a2c. from 'fatherhood', which abstractly signifies a relation of causality of the predicament of RELATION.
- b. A denominative:
  - b1. must be an accidental predicate;
  - b2. for otherwise:
    - b2a, it would not be denominative,
    - b2b. but:
      - b2b1. would belong to the same predicament as the subject whereof it is predicated,
      - b2b2. and would be predicated of it:
        - b2b2a, either directly as a genus or a species,
        - b2b2b. or indirectly as a specific difference.
  - c. Therefore:
    - c1. a denominative is predicated in the concrete,
    - c2. for abstracts are essential predicates.

D. Thus:

- a. is had the FIRST ANTE-PREDICAMENT.
- b. which is the DISTINCTION OF UNIVOCALS, EQUIVOCALS, ANALOGUES AND DENOMINATIVES.

135. SECOND ANTE-PREDICAMENT; All the examples above given (n.134), except one ('philosopher'). I have this common, that they express ONE essence only.

A. But in the division of the predicaments it is necessary to distinguish;

- a. complex concepts,
- b. and incomplex concepts (n.49).

B. But;

- a. Since a predicament is a metaphysical universal,
- b. for the ordering of universals, complex concepts must be reduced to several simple concepts.
  - c. Thus 'philosopher' expresses two realities (note that we say 'two realities', not 'two concepts'); for it signifies:
    - c1. 'man',- which is of the predicament of substance;
    - c2. and 'habit of philosophy', which is of the predicament of quality.

C. Thus:

- a. is had the SECOND ANTE-PREDICAMENT.
- b. which is the DISTINCTION OF COMPLEX AND INCOMPLEX.

136. THIRD ANTE-PREDICAMENT: Let us take two of the above examples (n. 134), to wit, 'man' and 'Peter\*';

A. These indeed;

- a. Have this common, that they belong to the predicament of SUBSTANCE, that is, to the predicament of those things which are in self, - not in other.
  - b. But these concepts are distinguished from each other in this:
    - b1. that 'man' can be predicated OF MANY, because it is universal;
    - b2. whereas 'Peter' CANNOT be predicated of many, because it is singular.

- B. 'Wherefore!
- a. It is nsoossary to distinguish:
- a1. those which are NOT IN a subjesct but are predicated OP a subject; such as 'man':
- a2. from those which ARB NOT IN a subject and ARB NOT PR^iDiCATBD OP A SUBJECT: such as 'Peter'.
- b. That is, substances, which are NOT IN a subject, must bo disting- uished, according as they are:
- either universal: these are said OP a subject;
- b2. or singular; these are NOT said O? a subject.

C. But from these are to be distinguished 'colour' and 'paternity', which indeed:

a. can be predicated OP A SUBJECT, because they are universals;

b. and ARE IN a subject, because they are accidents; for a man is said to be coloured or a father inasmuch as colour and fatherhood have in the man a subject of inhesion.

- D. But from these is to be distinguished that V/HICH IS IN A SUBJECT (since it is an accident) YET IS NOT PREDICATED OP A SUBJECT;
- a. Let us take this example: 'This green is pale';
- b. 'THIS green':
- b1. is IN a subject, v. g. in a leaf;
- b2. yet it is NOT predicated OP any subject, because it is singular.
- c. On the other hand, 'pale\*':
- c1. in Di a subject, to wit, in a leaf;
- c2. and is predicated OT a subject, to wit, of 'this green', because it is universal.

E. Which may be thus schematized in abbreviation;-

It is necessary to distin- guish bet- ween those things which are	but OP...v.g. man.	UNIVERSAL	
	not IN		SUBSTANCE
	nor OP.... v. g. peter.	SINGULAR	
	and OP..... v.g. colour.	UNIVERSAL	Being
	IN		ACCIDENT
	but not OP...v.g. tMs green.	SINGULAR	

- P. Thus:
- a. is had the THIRD ANTE-PREDICAMENT.
- b. which is the DISTB^CTION OP THOSE THINGS 'MICH ARB IN A SUBJECT />ND THOSE THINGS ^WHICH ARE SAID OP A SUBJECT.

137. FOURTH ANTE-PREDICAMENT: Let us take this example: 'A body is an extended substance'.

- A. That which is predicated of 'body', can be predicated of its inferiors, v.g. of 'animal\*':
- a. For the inferior:
- a1. contains the superior,
- a2. and therefore, whatever is true of the superior is true of inferior also.
- b. The same is to be said whenever predication is made about some subaltemating genus, i. e. about some superior genus on the trunk of the same Porphyrian tree.
- c. Wherefore there is consequence in these argumentations;-
- c1. "An animal is a bo^.  
But a body is an extended substance.  
Therefore an animal is an extended substance."

c2. "Triangle is a ^ape.  
But shape is a quality.  
Therefore triangle is a-quality."

a. Whence this FIRST AFTS-PREDICAMENTAL RULE: WHEN SOMETHING IS PREDICATED OF SOMETHING IN SUBJECT. WHATSOEVER THINGS ARE SAID OF THE PREDICATE, ARE SAID OF THE SUBJECT.

B. But let us take these examples; 'vital, corporeal, SUBSTANCE', and 'vital, corporeal, QUALITY':

a. These differences, 'vital' and 'corporeal', as they divide both 'substance' and 'quality' are as regards name only the same in each case.

b. For quality is not subalternated to substance, or, in other words, does not pertain to the same direct line or trunk.

c. Whence this SECOND ANTE-PREDICAMENTAL RULE; OF GENERA OF EACH ONE IS NOT SUBALTERNATED TO THE OTHER. THE ESSENTIAL DIFFERENCES ARE NOT THE SAME.

C. Thus;

a. is had the FOURTH ANTE-PREDICAMENT;

b. which is THE DISTINCTION OF THOSE THINGS WHICH BELONG TO THE DIRECT LINE OF THE PREDICAMENTS AND OF THOSE WHICH BELONG TO A LATERAL LINE.

138. REASON OF THE ANTE-PREDICAMENTS; From what has been said, it is easily gathered that;

A. The reason of the FIRST ante-predicament is that the predicaments must be so ordered that;

a. being may be said analogically of them;

b. within them, superiors may be said univocally of inferiors;

c. what is on the direct line in one predicament may be only equivocally named by the same name as what is on the direct line in another predicament;

d. one predicament denominates another or one is denominated from another.

B. The reason of the SECOND ante-predicament is that the predicaments must be so ordered that diverse essences may be ordered as diverse.

C. The reason of the THIRD ante-predicament is that the predicaments must be so ordered that;

a. one of the predicaments may be substance, and the others accidents;

b. and in each predicament things may be ordered according to predication and subjection, beginning from the more universal end descending right to singulars,

D. The reason of the FOURTH ante-predicament is that the predicaments must be so ordered as to dispose;

a. both genera and species, which constitute the direct line of the predicament,

b. and differences - divisive of genera and constitutive of species, - which constitute the lateral line.

## DISSERTATION PYO.

### THE VERY DIVISION OF THE PREDICAMENTS.

139. PRINCIPLE OF THE DIVISION; The principle of the division of being into predicaments is thus rightly stated by St Thomas;

A. "Otherwise is divided an equivocal, an analogue and a univocal:

a. "An EQUIVOCAL is divided ACCORDING TO THINGS SIGNIFIED;

b. "An ANALOGICAL ACCORDING TO DIFFERENCES;

c. "but an UNIVOCAL is divided ACCORDING TO MODES;

- B, "Therefore;  
 a. "aince being is AMAljOGICALjLY predicated of ten genera,  
 b. "it is divided into them ACCOHDINa TO DIVBRSE MODES.  
 c. "whei'efore to each genus is due a proper mode of predicating. "  
 (in V Metaphys. lect.9, ed. Cathala, n.899).

140. THE DIVISION: A predicate may have itself in diverse ways towards a subject,

- A- Let us take these examples: '[an is an animal\*, 'Albert is a man\*.  
 a. Here;  
     \*animal\* is THAT ^fllCH IS man.  
 a2. \*m^' is THAT vvhICH: IS Albert.  
 b. Each predicate signifies the SITBSTANCE of the subject.  
 c. Wherefore the first predicament is STJBSTAJCE:  
     c1. which is defined: A HETAPHYSICiHj tjiVSRsAL, or REAL BEING,  
 WHERE TO BE FITS BE TN SELF AL^D NOT IN OTHER.  
     c2. Vvhich is thus explained by St Thomas; "Substance has two proper characteristics;  
     c2a. "The first of which is that it does not need an extrinsic foundation wherein to be sustained, but it is sustained in itself, and therefore is said to subsist, as it were, existing through itself (per se) and not in another;  
     c2b. "but the other is that it is the foundation to accidents, sustaining them, and for so much it is said to stand under (substare). "  
 (De Pot. 9.9, a.1).

B. But if we take these examples: 'Peter is big', 'Peter is wise', 'Peter is a father':

a. Then the predicates are taken according to what IS IN the subject, or according to that vvhich is an ACCIDMT of the subject.

b. And so ACCIDMT is defined: THAT THERETO BE FITS BE IN ANOTHER AS IN. A SUBJECT. \_\_\_\_\_

c. But an accident may come to a subject in diverse ways;

- c1. The 'bigness':  
 cla. comes to Peter:  
     cla1. by reason of MATTSR; for if Peter were a spirit, he could not be said to be 'big';  
     cla2. yet it is not identified with matter; for, if it were identified therewith, since there is matter in every man, no man would be snail.  
 clb. Wherefore QUANTITY, whereby peter is big, is defined: AN ACCIDENT BSSTOT/MG UPON A SUBJECT THAT IT HAVE PARTS OUTSIDE PARTS AS REGARDS ITSELF. \_\_\_\_\_

- c2. But the 'wisdom\* also befits peter accidentally;  
 c2a. but by reason of his FOR?!, or, in other words, by reason of that whereby he is man;  
 c2a1. for wisdom is an intellective quality;  
 c2a2. but intellect is a quality flowing from the rationality of man.  
 c2b. Wherefore QUALITY is defined: AL\* ACCIDMT IFODIFICATIVE OR DETERMINATIVE OF SUBSTANCE JN T.T.HET.TI. \_\_\_\_\_

- c3. Let us now take the predicate 'father':  
 c3a. ^^Tiereas quantity and quality are in substance WITHOUT RESPECT TO ANOTHER. \_\_\_\_\_  
 c3b. it is otherwise with 'fatherhood\* whereby Peter is a father:  
     c3b1. for no man is a father save through respect to another, to wit, to a son (or daughter);  
     c3b2. and in this essentially consists fatherhood, which is some respect to another.  
 c2c. This pertains to the predicament of RETATTON. vvhich is: A REAL ACCIDENT. WHEREOF THE ^YHOLE BE IS HAVE SELF TOWARDS OTHER.  
 c4. But;  
 c4a. The accidents:  
 c4a1. mentioned so far:'



- c<sup>4</sup>a1a. not only are *ij* the subject,  
c<sup>4</sup>a1b. but are predicated of the subject by reason of this inhesion.  
c<sup>4</sup>a2. And of all accidents:  
c<sup>4</sup>a2a. the same is to be said as regards inhesion to a subject, for they all inhere therein;  
c<sup>4</sup>a2b. but not as regards predication of the subject.  
c<sup>4</sup>b. Let us take these examples: 'Peter is clothed', 'Peter is twenty years of age', 'peter is in the room', 'Peter is sitting\*', 'Peter cuts the bread', 'Peter is being struck by Paul':  
c<sup>4</sup>c. In all these examples:  
c<sup>4</sup>c1. Peter is affected IN DIVERSE WAYS, i.e. some accident IS IN Peter,  
c<sup>4</sup>c2. but each accident is predicated of Peter BY REASON OF SOMETHING WHICH IS PUTSIDE PETER: to wit, from clothes, from time, from place, etc.
- c<sup>5</sup>. In the first example, 'Peter is clothed':  
c<sup>5</sup>a. The predicate is predicated of the subject by reason of SOMETHING EXTRINSIC WHICH DOES NOT INHESITR the subject (Peter) but. is measured by it.  
c<sup>5</sup>b. Then is had the predicament HABIT.  
c<sup>5</sup>c. which is: AN ACCIDENT RESULTING IN THINGS FROM CIRCUMSCRIPTION OF CIRCUMAMBIENT THINGS.
- g<sup>6</sup>. But it is otherwise with the three following examples; for in these the predicate is predicated of the subject by reason of SOMETHING EXTRINSIC WHICH MEASURES the subject (Peter).
- g<sup>7</sup>. In the first of those examples, 'Peter is twenty years of age\*'.  
c<sup>7</sup>a- there is in Peter some accident, to wit, duration,  
c<sup>7</sup>b. which is predicated of Peter BY REASON OF SOME EXTRINSIC MEASURE, that is, OF TIME.  
c<sup>7</sup>c. To which corresponds the predicament DURATION.  
c<sup>7</sup>d. which is defined: AN ACCIDENT RESULTING IN THINGS FROM THIS THAT THEY ARE IN TIME AS MEASURED BY IT.
- c<sup>8</sup>. But in the next two examples this extrinsic measure is PLACE, to which correspond two predicaments.
- c<sup>9</sup>. In the former of these two examples, 'Peter is in the room':  
c<sup>9</sup>a. Peter is circumscribed BY A PLACE (the room) WITHOUT THE EQUATION OF PETER'S BODY RELATIVELY TO THE PLACE BEING DETERMINED.  
c<sup>9</sup>b. In which case is had the predicament WHERE,  
c<sup>9</sup>c. which is defined: AN ACCIDENT RESULTING IN A POSITION RELATIVE TO CIRCUMSCRIPTION OF CIRCUMAMBIENT PLACE. THE ORDER OF PARTS IN THE PLACE NOT BEING CONSIDERED.
- c<sup>10</sup>. But in the latter of those two examples, 'Peter is sitting\*':  
c<sup>10</sup>a. There IS DETERMINED THE POSITION OF THE PARTS of Peter's body relatively to the parts of the place.  
c<sup>10</sup>b. Then is had the predicament POSTURE (SITTING),  
c<sup>10</sup>c. which is defined: AN ACCIDENT DISPOSING THE PARTS OF A BODY IN PLACE. or ORDER OF PARTS IN PLACE.
- c<sup>11</sup>. In the last two examples, 'Peter cuts the bread\*' and 'Peter is being struck by Paul\*':  
c<sup>11</sup>a. The predicates are predicated of Peter BY REASON OF SOMETHING WHICH IS TOGETHER IN THE SUBJECT AND OUTSIDE THE SUBJECT;  
c<sup>11</sup>b. For the action of cutting is together in Peter and in the bread, and similarly the striking is together in Peter and in Paul;  
c<sup>11</sup>c. but otherwise in the two cases:  
c<sup>11</sup>d. for the action of cutting is:  
c<sup>11</sup>d1a. in Peter AS REGARDS ITS PRINCIPLE,  
c<sup>11</sup>d1b. but in the bread AS REGARDS ITS TERM;  
c<sup>11</sup>d2. whereas the striking is:  
c<sup>11</sup>d2a. outside the subject (Peter), to wit, in Paul, AS REGARDS ITS principle.  
c<sup>11</sup>d2b. but in the subject (Peter) AS REGARDS ITS TERM.  
c<sup>11</sup>d. Whence:  
c<sup>11</sup>d1. is had the predicament ACTION, which is: AN ACCIDENT WHEREBY. AN EFFICIENT CAUSE ACTUALLY CAUSING PRODUCES AN EFFECT UPON ANOTHER.

c1d2. and the predicament RISSION> wMch is; AN ACCTnSNT THROUGH WHICH A SUBJECT lvs CONSTITUTED ACTUit^XY RECEIVnTG .fW EFFECT FROMM AGENT.

C. What has been explained is, thus suinmarily said by St Thomas who in the following fashion deduces the ten predicaments: "A predicate may have itself to a subject in three ways;

a. "In one way, when it is THAT 'iHICH IS the subject, as when I say: \*Socrates is an animal\*. For Socrates is that which is an animal. And this predicate is said to signify FIRST SUBSTANCE, which is a particular substance, whereof everything is predicated.

"In a second way, that the predicate be taken according to what IS IN the subject:

b1. "which is in (it) either BY ITSSELF AND ABSOLUTST^Y:

bla. "as FOLLOY/THG UPON THE KATTIK. and thus it is QTJANTITY.

bib, "or as FOLLOWING UPON THE FORTi. and thus it is QUALITY;

b2. "or is in (it), not absolutely, but IN HESHSCt TO ANOTHER, and thus it is TOWARDS SOL^THING (RELATION). ——— ——— ———

c. "In a third way, that the predicate be taken from that which IS OUTSIDE the subject; and this in two ways:

c1. "In one way, that it be UTTERLY outside the subject:

cla. "which indeed, if it IS NOT THiB IC&IASURE of the subject, is predicated by way of HABIT, as when I say: \*Socrates is booted, clothed.\*

clb. "But if it IS T^HE IIBAS^IRB of it, since extrinsic measure is either time or place, the predicament is taken:

clb1. "either on the part of TDiB. and thus it will be WHEN,

clb2. "or on the part of PLACE;

clb2a. "and thus it will be wfeRE. the order of parts in the place not being considered:

clb2b. "which being considered, it will be POSTURE (SITUS).

c2. "In the other way, that tliat wherefrom the predicate is taken BE ACCORDING TO SO^CETHING IN the subject whereof it is predicated.

c2a. "And if indeed according to FRINCTPLE, thus it is predicated as BO, for the principle"of action is in the subject.

c2b. "but if according to thus it is predicated as SUFFER, for passion is terminated at the suffering subject." (In V Metaphys. lect. 9)\*

D. This division into ten predicaments is ADEQUATE, as is evident from the following scheme:-

A PREDICATE  
says

either  
THAT  
WHICH  
IS the  
subject

or that which is not the subject;

ACCIDENT

which is predicated of the subject;

either BY REASON OP  
THE SUBJECT ITSELF  
(or 'per se'): and  
\_\_\_\_\_thj sn\_\_\_\_\_

or BY REASON OP SOMETHING  
V/HICH IS NOT THE SUBJECT  
(or through other - 'per  
aliud')

either without  
respect to  
jinothor (or

or through' resnect to  
another

but is UTTERLY  
outside the  
subject; and  
then

but is NOT  
UTTERLY outside  
the subject,  
but only as  
regards

either or by  
by rea- reason  
son of of  
matter form

I"either or which mea-  
which sure3 the  
does subject, to  
not w^t;\_  
mea- j  
sure either or  
the place; time  
sub- and  
ject then;

either or  
indot- det-  
crmin- arm-  
ately ina-

SUB- STANCE	QUAN- TITY	QUAL- ITY	RELATION	HABIT	WHERE	EOS- TURE	WHEN	ACTION	PASSION
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ARTICLE THREE.

PROPERTIES OF THE PREDICAMENTS. OR THE POST-EREDICAIIENTS.

141. NATURE OP THE POST-PREDICAIIENTS: The post-prodicaments are certain characters pertaining to all or several predicaments, - as it were properties common to all or to several.
142. DIVISION OP POST-PREDICAJ.CENT3: Five post-predicaments are enumerated:

A. To wit;

a. Opposition;

b. Before or prior (prius);

c. Together (siraul);

d. Movement;

e. and have.

- B. Four of these:
- a. to wit:
    - opposition,
    - before,
    - together.
    - and have,
  - b. express the relation of predicaments to each other, and so regard all the predicaments.
  - c. Nevertheless, they are to be taken:
    - c1. not formally, for the very relations themselves, - for thus taken they would belong to the predicament of relation;
    - c2. but fundamentally, i.e. for the foundations of the relations, or, in other words, for the very predicaments themselves according as they found relation to each other.

- C. The other, to wit. movement or change:
- a. Of itself (per se) regards four predicaments only,
  - b. to wit:
    - b1. substance - according as movement is corruption-generation,;
    - b2. quantity - according as movement is increase or decrease;
    - b3. quality - according as movement is alteration;
    - b4. where - according as movement is translocation.

143. OPPOSITION: Concerning opposition, it is sufficient here to note:

A. That OPPOSITION is THAT REMOVAL OF MANY SUBSTANCES BY VIRTUE OF WHICH CANNOT BE TOGETHER IN THE SAME SUBJECT.

B. That opposition is divided:

- a. into NEGATIVE. which is:
  - a1. either CONTRADICTORY.
  - a2. or PRIVATIVE;
- b. and POSITIVE, which is:
  - b1. either CONTRARY.
  - b2. or RELATIVE.

C. Concerning opposition indeed something has been said earlier. (n.57.C.).

144. PRIORITY: Regarding priority (before-ness), it is enough here to note that;

A. Priority is defined: MODE WHEREBY ONE PRECEDES ANOTHER.

B. Priority is divided into five priorities, which are thus explained:

a. Take this example: \*The fourteenth day of April is before the fifteenth.\*

- a1. This is called priority OF TIME.
- a2. which is: PRIORITY ACCORDING TO WHICH SOMETHING PRECEDES ANOTHER ON THE SCORE OF DURATION.

b. And this example: \*Animal is before man\*.

- b1. This is called LOGICAL priority or priority ACCORDING TO CONSEQUENCE OF BEING.
- b2. which is: PRIORITY ACCORDING TO WHICH SOMETHING IS SO INFERRED FROM ANOTHER THAT THIS IS NOT INFERRED FROM IT.

And this example: \*Peter is seated in the class before Paul in regard to place.\*

- c1. This is called PRIORITY OF ORDER OR OF POSITION.
- c2. which is: PRIORITY ACCORDING TO WHICH SOMETHING PRECEDES ANOTHER RELATIVELY TO THE PRINCIPLE OF AN ORDER.

d. And this example: \*A bishop is before a priest.\*

- d1. This is called PRIORITY OF DIGNITY OR OF AUTHORITY.
- d2. which is: PRIORITY ACCORDING TO WHICH ONE PRECEDES ANOTHER IN REGARD TO DIGNITY OR AUTHORITY.

e. And this example: 'Cause is before effect.'

e1. This is called PRIORITY OF NATURE or PRIORITY ACCORDING TO CAUSALITY

e2. "which is: PRIORITY ACCORDING TO WHICH ONE RECEDES ANOTHER ACCORDING TO CAUSALITY.

e3. This priority:

e3a. is of the greatest moment,

e3b. and is not to be confused with priority of time;

e3b1. For it exists between cause and effect,

e3b2, and it bespeaks DEPENDENCE of effect upon cause.

g4. it IS TO BE NOTED;

e4a. that a cause, as it is actually causing, is never before the become of the effect by priority of time: for they are together according to time;

eAb. but a cause is always before its effect, by priority of nature: for the effect depends upon the cause.

e5. IT IS TO BE noted ALSO that;

e5a. since in this priority cause and effect must be taken formally, i.e. as actually causing, or as actually caused,

e5b. this priority admits reciprocity between those which are causes to each other but in a diverse genus of causality; as when, for example;

e5b1. the dryness of the field causes the ditch in the genus of final causality, - and therefore according to final causality is before the ditch,

e5b2. whereas the ditch causes the dryness of the field in the genus of efficient causality, and therefore according to efficient causality is before the dryness.

145. TOGETHERNESS: Togetherness is sufficiently explained thus:

A. It is: NEGATION OF PRIORITY AND POSTERITY (i.e. of beforeness, and afterness).

B. Wherefore it is divided into as many members as is priority: accordingly are to be distinguished:

a. Togetherness of TBCE (simultaneity of time), which is between those which exist together at the same instant.

b. Togetherness of CONSEQUENCE, which is between those which mutually infer each other, - as rational and risible.

c. Togetherness of ORDER or of POSITION.

d. Togetherness of DIGNITY or of AUTHORITY.

e. Togetherness of NATURE, which is between those which mutually infer each other, so, however, that one is not the cause of the other: as is the case with correlatives, such as brothers or sisters.

146. HAVE: Concerning 'have' it is sufficient to note that:

A. Have is defined; A MANNER ACCORDING TO WHICH ONE THING IS ORDERED TOWARDS ANOTHER SO THAT IT BE SAID THAT ONE IS HAD BY THE OTHER.

3. There are five chief modes of having, to wit;

a. First. BY INHERENCE, or the mode wherein an accident is had by a substance.

b. Second, BY CONTAINMENT. as a cistern has water.

c. Third, BY POSSESSION, as a man has a field.

d. Fourth, BY RETENTION, as a father has a son.

e. Fifth. BY JUXTA-POSITION, as Italy has Switzerland on the north.

147. MOVEMENT: Regarding movement it is enough here to note that:

A. Movement is: THE STATE OF TENDENCY AND OF WAY MERELY SOME SUBJECT IS TRANSFERRED, FROM ONE MODE OF HAVING ITSELF TO ANOTHER.

B. Movement can be considered in two ways, to wit, either materially for the form which is in becoming or movement, or formally for the very state of tendency and of way.

a. Under the former aspect it pertains reductively to the predicament of its terms.

b. But under the latter aspect:  
 b1. it is a post-predicament,  
 b2i. and cannot be reduced to any predicament,  
 b3\* but rather as an analogue of itself ('per se') respects several predicaments, to wit;

- b3a\* substance - according as movement is corruption-generation;
- b3b« quantity - according as movement is increase or decrease;
- b3c. quality - according as movement is alteration;
- b3d. where - according as movement is translocation,

C. However, the post-predicament 'movement' has itself otherwise in instantaneous movement (in movement towards substance), and in successive movement (in movement towards quantity, quality and where);

a. For movement towards a substance:  
 a1o is INSTANTANEOUS,  
 a2. and in it there is no real distinction;  
 a2a. between:  
 a2a1, movement or become (fieri),  
 a2a2, and its term or 'have become' (factum esse),  
 a2b. nor between these and the thing moved or the form according to which the movement is,  
 a3\* And therefore it does not bespeak any special modality or nature, which would be:  
 a3a, distinct from all the ten predicaments,  
 a3b, and irreducible to any of them,  
 a4a And therefore this instantaneous movement,  
 a4a, like the other four post-predicaments (to wit, opposition, priority, togetherness and have),  
 a4b, retains its identity with some (one) of the ten predicaments,

b. But movement of translocation, of alteration and of increase and decrease:

b2. and in it there is real distinction:  
 b2a. between:  
 b2a1, movement or become (fieri),  
 b2a2« and its term or 'have become' (factum esse),  
 b2b, and between these and the thing moved or the form according to which the movement is,  
 b3« And therefore it does bespeak a special modality or nature or entity, which is:  
 b3a, distinct from the entities bespoken by the ten predicaments,  
 b3b, and reducible to none of them.  
 b4\* And therefore this successive movement is not reducible to the predicaments to which it is movement, because it signifies a new nature or modality, modificative of these predicaments,  
 b43.. Wherefore it does not have itself to these predicaments as their existence has itself to them:  
 b4b0 for the existence of an essence pertaining to some predicament,  
 b4b1, although really distinct from the essence of the predicament,  
 b4b2, nevertheless does not add any real nature modificative of that essence,  
 b4b3« and therefore is reducible to the predicament whereto that essence pertains; so that:  
 b4b3a, the existence of a substance is reducible to the predicament of substance,  
 b4b3b, and the existence of a quality is reducible to the predicament of quality,  
 b4b3c, and so on for the rest,  
 b5\* And therefore successive movement:  
 b5a, is a post-predicament in a quite special sense, inasmuch as,  
 b5b, unlike all the other post-predicaments (to wit, opposition, priority, togetherness and have),  
 b5c. it is really distinct from all the ten predicaments.

ANALOGOUS PREDICABILITY.

148. ORDER OF PROCEDURE: Having dealt with univocal predicability, in which predicates respect inferiors (subjects) according to a same character or signification:

A. We come to the consideration of ANALOGY, or, in other words, of the characteristic of predicates which befit subjects according to a DIVERSE signification.

B. But a predicate which is attributed to many subjects according to a PREDICABLE CHARACTER, might befit them according to a character:

- Q. either UTTERLY diverse,  
only PARTLY diverse: and in this latter case, then in either of two ways, to wit;  
b1. either SIMPLY (simpliciter) diverse,  
b2. or IN A SECONDARY FASHION (secundum quid) diverse.

C. Hence the following division of predicates according to sameness and unsameness of signification or of character signified:-

either the SAME in each subject.

A predicate attributed to many subjects may signify in them a character which is		either IN A SECONDARY FASHION diverse.
	either PARTLY diverse; and then again	or SIMPLY diverse.
	or DIVERSE in each subject: and then	
	or UTTERLY diverse.	

D. To which diversity analogous predicability pertains, is to be determined here-below.

- E. And indeed;  
a. The notion of ANALOGY;  
a1. since:  
a1a. it is of the greatest importance in the whole of philosophy,  
a1b. and is to some degree difficult and controverted.  
a2. needs some special attention.  
b. Therefore we must determine that notion, by the pursuit of its definition, through comparison;  
b1. with the univocal,  
b2. and with non-univocals,  
c. And indeed, here more will be said than is strictly necessary for our present purpose;  
c1. because the theory of analogy is called into use in other parts of philosophy,  
c2. and thus will be avoided the necessity of dwelling upon it at length again in other places.

- P. Accordingly:  
a. This treatment of analogous predicability will consider:  
a1. First, the nature of analogue;  
a2. Secondly, the division of analogues;

- a3. Thirdly, a comparison between the Suaresian doctrine of analogy and that of St Thomas,
- b. Hence the following order:-

NATURE of analogue	Chapter nine.
On analogous DIVISION of <b>analogues</b> . predicability;	Chapter ten.
Comparison of Suarez' doctrine and that of St <b>Thomas</b> .....	Chapter eleven.

CHAPTER NINE.

NATURE OF ANALOGUE.

149. NOMINAL DEFINITION OF ANALOGUE: It is manifest indeed that:

Not in the same way are these concepts predicable of their inferiors, to wit:

- a. On the one hand, the concepts 'man', 'carpenter', 'horse'; And on the other hand, the concepts 'tick', 'lighter', 'board', 'match', 'angry', 'stupid', 'healthy', 'being'.

B. The former, to wit, 'man', 'carpenter' and 'horse', are predicable of subjects according to the SAME CHARACTER or signification, i.e. so as to signify in their subjects THE SAME CHARACTER.

- a. Thus 'man' is said of Peter, of Paul and of John, so as to signify in each of them the same character, to wit, 'rational animal'.
- b. Thus also 'carpenter', said of James, of Henry and of Thomas, signifies in each of them the same character, to wit, 'skilled in and engaged in, fabricating houses and such like from wood.'
- c. Thus again 'horse', said of Carbine, of Trafalgar, of Phar Lap and of Bernborough, retains always an unvaried signification.

C. But the latter concepts, to wit, 'tick', 'lighter', 'board', 'match', 'stupid', 'healthy' and 'being' are predicated of diverse subjects ACCORDING TO VARIED SIGNIFICATION.

- a. This is evident with regard to 'tick' from the following:-

'The cause of my dog's sickness...,' where 'tick' signifies a determinate parasitical animal.  
  
is a tick'.

'The cause of my awakening.,' where 'tick' signifies a determinate slight, sharp, noise.

- b. Similarly with regard to 'lighter', which as predicated:
  - b1. of one subject signifies 'that whereby a fire is enkindled', as when we predicate 'lighter' of a mechanism used for lighting cigarettes;
  - b2. of another subject signifies 'small ship used as a tender to larger ships'.
- c. Likewise with regard to 'board', which as predicated:
  - c1. of one subject signifies 'wooden plank';
  - c2. of another subject, signifies 'committee of men', as when we speak of a Board of Directors, or the Board of Trade, or the Education Board.



d. In similar manner mth regard to 'match\*', which as predicated;  
 d1. of one subject signifies 'device for enkindling .fires\*';  
 d2. of a second subject signifies 'equal\*', as when we say "Wellington was a match for Napoleon".  
 d3. of a third subject signifies 'game in which there is contest for victory',

e. Again with regard to 'angry', which when predicated;  
 e1. of one subject signifies 'affected by an animal passion inclining to harm a hurter', as when we say 'the dog is angiy'.  
 e2. of another subject signifies 'producing disorder or damage', as when we say 'the sea is angry'.

f. Likewise with regard to 'stupid\*', which when predicated:  
 f1. of one\_ subject signifies 'dullness of mind';  
 f2. of a second subject signifies 'subject of mental dullness\*', as if we say 'Henry is stupid'.  
 f3. of a third subject signifies 'effect of mental dullness', as if wo say 'this plan is stupid'.

g. Similarly with regard to 'healthy\*', which when predicated:  
 g1. of one subject signifies 'essence of health', as when we say 'normally functioning organic constitution is healthy';  
 g2. of a second subject signifies 'subject of health\*'. as when we say 'Peter is healthy'.  
 g3. of a third subject signifies 'cause of health\*', as when we say 'this food is healthy' or 'a sea-voyage is healthy';  
 g4. of a fourth subject signifies 'sign of health\*'. as when we say 'rosy colour of the cheeks -is healthy\*.

h. In like manner with regard to 'being\*', which as predicated:  
 h1. of one subject, to wit, of God, signifies 'being from self\* or \*essence v^ich is ;  
 h2. of a second Subject, to wit, of creatures, signifies 'beiGg. from other\* or 'essence which has be';  
 h3. of a third subject, to wit, of substance, signifies 'being in self ;  
 h4. of a fourth subject, to wit, of accident, signifies 'being in other'.

D. But among these names which are predicable according to DIVERSE character, there is distinction to be made:

a. For some of them in the diverse attributions made of them signify a character UTTERLY diverse:  
 a1. which is so in the first four examples, to wit, 'tick', '13.ghter , 'board' and 'match'.  
 a2. Concepts which are thus predicable of many according to a character UTTERLY diverse are called PURELY BOUIVOCAL or SD^K.Y EQUIyOCAL.  
 a3. But OBSERVE that 'utterly\* diverse is not the same as \*totally\* diverse:

a3a. For a name may in the diverse predications made of it:  
 a3a1. signify characters utterly diverse, as does 'tick\* v/hen predicated of that beast and of that sound;  
 a3a2. without sirnifyint? characters totally diverse: - inasmuch as within the comprehension of those diverse characters there is some same

a3b. For;  
 Utter diversity is had whenever there is such diversity that there is no sameness according to some note;

a3b2. But total diversity, taking the term 'total' strictly as here, requires that there be no sameness according to any note at all.

a3c. Thus (in Latin) 'gallus' signifies 'rooster\*' and 'Gaul', between which characters:

a3c1. there is utter diversity for there is no sameness according to the essential notes of 'rational' and 'irrational',

a3c2. though there is not total diversity, for there is sameness according to the essential note of 'animal\*.

a3(3. And;

a3d1. utter diversity is enough to render a name purely equivocal,

a3d2. total diversity not being required for pure equivocity.

b. But some of those names in the diverse attributions made of them signify a character NOT UTTERLY diverse:

b1. which is so in the last four examples, to wit, 'angry', 'being\*', 'stupid\*' and 'healthy\*': for the characters signified by each of these in their various predications: -

bla. though they have some DIFFERENCE between them,

bib. nevertheless retain SOMEWHATNESS.

b2. Concepts which are thus predicable of many according to a character NOT UTTERLY diverse, but PARTLY DIVERS AND PARTLY THE SAME, are called ANALOGOUS CONCEPTS or ANALOGUES. ^

150. ESSENTIAL DEFINITION OF ANALOGUE; However, so far we have not yet an ESSENTIAL definition of analogue.

A. Wherefore:

a. since analogue participates to some extent in the univocal and to some extent in the equivocal,

b. we must further find out;

b1. Whether analogue approaches NEARER to the one or the other (i.e. to the univocal or to the equivocal),

b2. or whether it is EQUALLY distant from each of them? .

B. And indeed;

a. That:

'angry\*' or 'stupid\*' or 'healthy\*' or 'being\*':

ala. neither approaches NEARER TO THE UNIVOCAL.

alb. nor is EQUALLY DISTANT from both univocal and equivocal,

a2. is clear:

b. For 'angry\*' as said of an animal ESSENTIALLY differs from 'angry\*' as said of the sea:

b1. For as said of an animal signifies 'affected by animal passion inclining to harm a hurtler\*'; "

b2. whereas as said of the sea, it signifies 'productive of effects similar to the effects of anger\*.

c. Similarly 'stupid\*' as said of mental dullness, and of Henry, and of a plan, ESSENTIALLY DIFFERS in the three cases:

c1. For as said of mental dullness it signifies 'that which is stupidity\*' or 'essence of stupidity\*';

c2. whereas as said of Henry it signifies 'that which has stupidity\*' or 'subject of stupidity\*';

c3. and whereas as said of a plan it signifies 'that which is caused by stupidity\*' or 'effect of stupidity\*.

d. Likewise 'healthy\*' as said of normally functioning organic constitution, and of Peter, and of food, and of colour, ESSENTIALLY differs in the four cases:

d1. For as said of normally functioning organic constitution it signifies 'that which is health\*' or 'essence of health\*';

d2. Whereas as said of Peter it signifies 'that which has health\*' or 'subject of health\*';

d3. and whereas as said of food it signifies 'that which causes health\*';

d4. and whereas as said of colour it signifies 'that which signifies health\*.

e. In similar fashion 'being\*' as said of God and of creatures, of substance and of accident, ESSENTIALLY differs:

e1. For:

ela. as said of God it signifies 'being from self\*',

elb. whereas as said of creature it signifies 'being from other\*';

e2. and:

e2a. as said of substance it signifies 'being in self\*.

e2b. whereas as said of accident it signifies 'being in other\*.

f. Therefore:

f1. These analogues CANNOT be said of their inferiors, without contradiction, according to a character ESSENTIALLY THE SAME; for they are said of them according to characters ESSENTIALLY UNSAME.

f2. /uid therefore the analogue in its various attributions is predicated according to characters MOHB UT'Safjg TJIAN SAlE; for these characters:

f2a. are T^SSSNTTAU.Y unsame,

f2b. and hence can be only AGCIPY?-rTALLY or SECONDARn^Y same.

f3. 'Therefore the analogue:

f3a, neither EQUALLY participates from univocal and equivocal, nor approaches lftARER TO TINIVOCAL than to equivocal.

C. Therefore it must be held tlvit the AUALOO-TIE approaches NEARER TO EQTTTVOnAT.. inasmuch as IT IS TR'DICABL'!: OF ITS INFERIORS ACCORDING TO A Ct-IARACTER BSSEFTIALLY DIVERSE.

D. But;

a. since an alalogue;

a1. is not purely equivocal (i.e. is not predice.ble according to a character UTTERLY diverse),

a2. but rather is predicable according to'a character NOT UTTERLY diverse,

b. an ANALOGUE must be said to be a PREDICATE YffilCJI BE^TS MNV ACCORDING TO A C.UARACTER SB-THiY SPEAKING OR ESSENTIALLY DIVERSE. YET IN A SECONDARY EASHION OR ACCIDENTALLY THE SAME.

c. And:

a1. on this account the analogue is often called also EQUIVOCAL FROM DESIGN (aequivocum a consilio) or EQUIVOCAL IN A QUALITIED SENSE (aequivocum secundum quid), inasmuch as.it is BASED upon an accidental similitude.

a2. On the other hand, a predicate which WITHOUT FOUNDATION signifies diverse cijaracters is called EQUIVOCAL FROV CHANCE (aequivocum a casu) or EQUIVOCAL SBiPLY (aequivocum simpliciter).

151« SUMMARY: What has been said is summarized in the follcwing scheme, in which the logical division appears more clearly

either the SAlvS!; and then the predicate is UNIVOCAL.

simply the same,

together

and simply diverse.

not  
indeed

For this notion would be  
contradictoiy

yet not  
equally  
same and  
diverse,  
to wit.

in a secondary fash-  
ion the same,

together

and in a sepondary  
[fashion diverse;

Any  
HffiDICATE  
which is  
said of  
many is  
said of  
them  
ACCORDING  
TO A  
CHARACTER  
(reasoh.  
MEAEIHG)

either'  
mJUTERLX,  
but partly  
the same  
and partly  
diverse:

nor Per this notion would not save  
equality, since the character  
simply considered preponder-  
ates either towards sameness  
or towards di'versity.

Fin such wise that it more  
[participates univocity;

|  
I

simply,(es-  
sentially)

not For if that  
however were so, then  
univocals too  
would be  
analogues:  
since uni-  
vocals are

the same,

and in a  
secondary  
fashion  
(individu-  
ally)  
diverse.  
—

;  
f  
i

Or  
DIVERSE;  
and then  
the pre-  
dicate  
is a  
HOMONYli;  
and then  
the char-  
acter  
may bo  
diverse

but  
unequally  
same and  
diverse:

more particinating equivocity

SIMPLY DIVERSE,

so that the  
predicate is  
but predicated  
according to but ITT A SECaiD-  
a character ARY PASHIOH THE  
SAiinfl.

And then the predicate  
i.s an ANALOGUE.

or UTTERLY: and then the predicate is EQUIVOCAL.

## CHAPTER TEN.

## DIVISION OF ANALOGUES.

152. ANALOGY OF ATTRIBUTION OR OF PROPORTION: Let us take the example 'healthy':

A. 'Healthy':

a. is predicable:

al. of:

ala. health or normal organic constitution,

alb. food.

ale. colour or complexion,

aid. Peter;

a2. because it signifies:

a2a. the ESSENCE of health or of normal organic constitution,

a2b. the EFFICIENT CAUSE of health,

a2c. the SIGN of health,

a2d. or the. of health.

b. Which is thus illustrated schematically:-

'Normal state of organic constitution	as ESSENCE of health,
	as CAUSE of health,
is healthy*	as SIGN of health,
	as SUBJECT of health.

B. Wherefrom it is apparent:

a. that:

al. not only is the character signified by the name 'healthy' <sup>oT^rorv</sup> SIMH^.

(essentially) diverse;

a2. but:

a2a. normal organic constitution alone IS health (is the essence or health); or, in other words, to this analogate alone is hQ

a2b. whereas to the other analogates health has itself EXTRINSIC^Y:

a2bl. for dLimats (or cause of health) and health are outside^ each other\*

a2b2. and colour (or sign of health) and health are outside each other\*

a2b3. and Peter (or subject of health) and health are outsi^ each other.

C. This analogy:

a. in which a character simply diverse:

al. is INTRINSIC TO ONE inferior or analogat\_e\_ only.

a2. "hflVTt.^eTF EXTINSICALLY to the other inferiors or

analogates,

b. is called ANALOGY OF ATTRIBUTION OR OF PROPORTION.

b1. But:

bla. the analogate:

blal. to which the character signified is INTRINSIC,

bla2. and relatively to which the analogous predicate befits the

other analogates,

bib. is called the PRINCIPAL ANALOGATE.

b2. Whereas:

b2a. those analogates:

b2al. to which the character signified is EXTRINSIC only,

b2a2\* and which are referred or related to the principal analogate,

b2b. are called SECONDARY ANALOGATES.

D. Which may be thus schematically illustrated:-

CLIMATE —  
is healthy  
in the sense  
that it  
is related  
to health  
as cause to  
effect

-) NOmML CONSTITUTION^  
is healthy in the  
sense that it IS  
health.

-COLOUR is.  
healthy in  
the sense  
that it is  
related to  
health as  
sign to  
signed.

PETER  
is healthy in the  
sense that he is  
related to health  
as subject to form.

153. ANjMiOGY OP PROPORTIONALITY: But not **all** analof^ues are susceptible of being explained in the above fashion.

A. **L**et us take these analogues:

- a. 'being\*,
- b. 'knowledge\*,
- c. 'an^yy',
- d. 'shepherd'.

B. Por:

- a. 'Being\* as said of God and of a creature, of substance and of accident, requires another explanation;
- b. And likewise 'knowledge' as said of understanding (intellection) and of sensation;
- c. And similarly 'angry\* as said of an animal, or God, and of the sea;
- d. And also 'shepherd\* as said of a watcher of sheep and of a superior of a community (v.g. a bishop).

C. Vifhich will be apparent if among the following schemes, the last four are compared with the first:

	organic constitution has to be named healthy.	<b>IS,.that</b> it IS health.
The title	climate has to be named healthy.	is not..... that' it is health.
or reason	colour has to be named healthy.	is not..... that it is health.
which	Peter has to be named healthy.	is not..... that he is^ health.
	b. God has to be named being.	<b>IS....that</b> he IS a being.
The title	creature has to be named being.	<b>IS..that</b> it IS a being.
or reason	substance has to be named being,	<b>IS....that</b> it IS a being.
which	accident has to be named being.	<b>IS,.that</b> it IS a being.
	c. intellection has to be named <b>knowledge.IS.</b>	that <b>it</b> IS knowledge.
The title		
or reason	sensation has to be named <b>knowledge.IS</b>	that <b>it</b> IS knowledge.
which		
	d. passion of an animal has to be named <b>anger....IS.</b>	that <b>it</b> IS anger.
The title	God* s will to punish has to be named <b>anger.IS.</b>	that <b>it</b> IS (improperly) anger.
or reason		
which	the storminess of the sea has to be named <b>anger.....IS.</b>	that <b>it</b> IS (improperly) anger.
		<b>IS.....that</b> he IS a shepherd.
		<b>IS....that</b> he IS (improperly) a shepherd.
	D. In these last four examples;	
	a. the simply diverse character:	
	a1. INTRINSICALLY befits ALL the analogues,	
	a2. whereof <b>it</b> represents the SIMPLY DIVERS5 ESSENCES.	
	b. For:	
	"b1. God, creature, substance and accident;	
	b1a. are essentially and INTRINSICALLY being,	
	b1b. but diversely.	
	b2. Likewise understanding and sensation;	
	b2a. are essentially and INTRINSICALLY knowledge,	
	b2b. but diversely.	
	b5. Similarly the passion of the animal,• the will of God to punish,	
and	storminess of the sea~;	
	b3a. are essentially and INTRINSICALLY anger,	
	b3b. but diversely.	

- b4. And also a watcher of sheep and a bishop;
- b4a. are essentially and HttrINSICALLY shepherds,
- b4b. but diversely.
- E. Yet this diversity;
- a. retains between the analogates some FP.ObORTIONAljITY,
- b. and therefore this analogy is called ANALOGT OF PROPORTIONALITY.
- b1. For proportionality is PROPORTION OP PROPORTIONS,
- b2. as is illustrated thus;-

(proportion)	(proportionality)	— (proportion)
		8

b3. or thus;

3 : 6

(proportion)	(proportionality)	(proportion)
--------------	-------------------	--------------

b4. Which is to be understood thus; 'As 3 has itself to 6, so 4 has itself to 8\*.

p. And in like manner;

Essence of God	Essence of creature	
be of God	be of creature	
b. Essence of substance	Essence of accident	
be of substance	be of accident	
Intellection	Sensation	
form had intellect!vely	form had sensitively	
Animal anger	God* s	Storminess of sea
effects of anger	punitive will	its effects
	punishment	
e. Shepherd	Superior	
direction of flock	direction cf community	

G. But now it is to be explained why in these diagrams the proportionality has been indicated by the sign ' ', whereas when it was question of mathematical proportionality above the sign \* — -\* was used.

- a. The REASON is that;
- a1. whereas when it is question of mathieroal^iGal proportionality the proportions are SIMPLY the same, -- wherefore when 3 is named half of 6, and when 4 is named half of 8, the name 'half\* is UNIVOCAL;
- a2. when it is question of analosigal proportionality the proportions are only SECONDARILY (secundum quid) the same, but simply diverse, - wherefore when God is named being and when a creature is named being, the name 'being\* is AI^ALOGOUS.



b. Honco it is not sufficient for analogy of proportionality that diverse inferiors receive the same predicate on account of sameness of proportions, but it is required also that this sameness of proportions (i.e. the proportionality) be a-sameness ONLY SBCQ^DARILY; which maybe thus illustrated in the following four schemes, where ONLY THE LAST verifios proportionality; -

b1		'HALF' signifies	
QUANTITY	WITH	PROPORTION TO	DOUBLE I
	by reason of	proportion to	is half UNIVOCALLY.
	by reason of	proportion to	
		'SON' sigpifies	
MALE ANIMAL	WITH	RELATION TO	PARENT
G-eorge VI	by reas6n of	relation to	George
Young ball	by reason of	relation to	his sire is a son DNIVOC-ALLY.
Young horse	by reason of	relation to	his sire
		'WALKER'^ signifies	
ANIMAL	WITH	PROPORTION TO	WALK
	by reason of	proportion to	walk
Horse	by reason of	proportion to	ymilk i is a walker UNIVOCALLY.
	by reason of	proportion to	walk
	by reason of	proportion to	walk
		'BEING' signifies	
ESSENCE	WITH	PROPORTION TO	BE '
	by reason of	proportion to	his be
		I	
Creature	by reason of	proportion to	its be is a being ANALOGI-CALLY.
		I	
Substance	by reason of	proportion to	its be
		I	
Accident	by reason of	proportion to	its be

H. But analogy OP PROPORTIONALITY is divided into analogy of PROHSR proportionality and analogy of METAPHORIC proportionality:

.a. If indeed the proportionality is proper, that is, if the character signified by the analogue is found formally in each proportion:

a1. then is had ANALOGY OF PROPER PROPORTIONALITY.

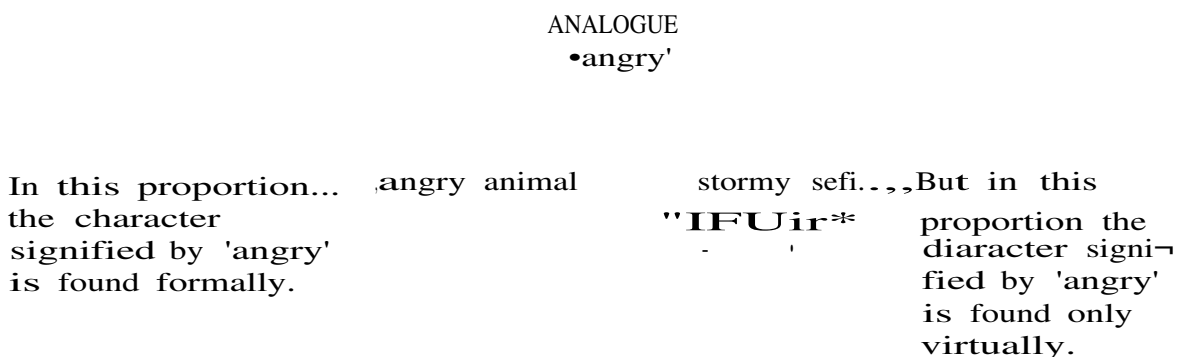
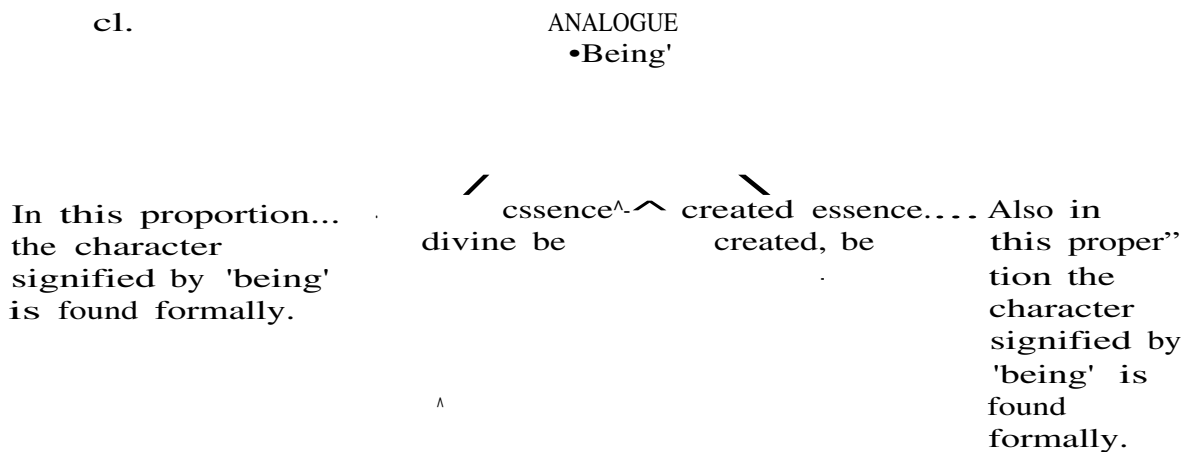
a2. Such is the analogy of being; for the character bespoken by the analogue, which cha.racter is 'proportion of essence to be\*', is found formally in each of tho proportions, to wTtl

For the character bespoken by the analogue, which character is If\*  
 'n oi' essevic:. bv.', xs fouiiu fonnally in each of the proportion ,  
 to'vnl:

- a2a/>. in the proportion of the divine essence to the divine be,
- a2b«. in the proportion of the creature's essence to the creature's bo,
- aL2^>>. in the proportion of the essence of substance to the be of i  
 substance.
- a2dv. and in the proportion of the essence of accident to the be of  
 accident.

- b. But if the proportionality is improper;
- bl. that is, if the character signified by the analogue is found;
- bla. formally indeed in one of the proportions,
- bib. but ONLY VIRTUALLY in the other (or others),
- b2. then is had ANALOGY OF TffitAFHQRIC PHOPCRTIONALITY.
- b3. Such is the analogy of angry;
- b3a. For the character bespoken by the analogue, vAiih character is  
 'proportion of passion towards the harm of a hurter', is found;
- b3al. formally indeed in one' of the propOTtions.
- b3a2. but ONLY VIRTUALLY in the proportion of the storminess of the  
 sea towards the vrrecking of ships, inasmuch as this proportion of the sea  
 to the wrecking of ships is a FCTOR (virtue) of producing the same effects  
 as anger produces.

c. Which may be thus schematically illustrated through the comparison  
 of these two schematic representations



- d. It may be noted that St Thomas;
- d1. indicates this distinction in these places; De Malo, q. 7>a.1;  
 De Verit. q. 2, a. 11;
- d2. and speaks of diverse proportions in these places; In II Sent. dist.  
 27, q. 1> a. 3» In I Post. Anal. Iect.12, n.8; In V Ethic, Iect.5, 6, 7j  
 In V Polit. Iect.1; II-II, q.61, aa. 1~2; q.63, a.1.

154\* HCAitPLES OP DIVERSE ANALOGIES: Examples of the diverse analogies are  
 found in the following, the schematic division being taken sihstantially  
 from the work of Father Ramirez O.P. ; 'Do Analogia Nominum secundum Doctrinam  
 Aristotelico-Thomisticam' (p.587:

A. SCHEMATIC DIVISION OF ANALOGY: This is as follows;

Analogy is divided according to as a character simply diverse is	either INTRINSICALLY NOT IN ALL the analogates, but in one only; ANALOGY OF CONTRIBUTION; it may be	either from one; and then	either according to efficient cause; and then	either of one from one...1
				[or of many from one...2
				either of one from or in <b>one...3</b>
				or of many from or in <b>one...4</b>
				either of one to <b>one...5</b>
				or of many to one...6
				either of one to <b>one...7</b>
				or of many to one...8
or INTRINSICALLY IN ALL the analogates; analogy according to intrinsic formal cause or ANALOGY OF PROPORTIONALITY; but the character may be	either PROPORTIONALLY in each proportion: ANALOGY OF PROPER PROPORTIONALITY; but the diversity between these proportions may be	or FORMALLY NOT IN EACH proportion, but formally in one and virtually in the other; ANALOGY OF METAPHORIC PROPORTIONALITY; but the diversity between these proportions may be		either determinate (or <b>finite</b> ).
				or indeterminate (or infinite)
				either determinate (or finite)
				or indeterminate (or infinite).... 12

B. EXAMPLES: The ultimate members of the above division are, for the sake of easy reference, numbered; the following as correspondingly numbered refer respectively to those ultimate members;-

a. Analogy of attribution according to efficient cause;-

- Foresight is prudent.  
A book...
- A **book**... 'Prudent' is analogous.
- An **action**. is prudent.  
A mode of speech\*.
- A kind of teaching

b. Analogy of attribution according to material cause (subject)

An intellect is human.

An intellect.

'Human\* is analogous.

A sight or hearing.

A colour.... is human.

A stature.

A corporeal organization

c. Analogy of attribution according to final cause;~

Normal organic constitution is healthy.

A climate.

A complexion.

'Healthy\* is analogous.

A medicine.. is healthy.

A complexion

Sleep,

d. Analogy of attribution according to exemplary cause

A structure is a bridge.

A picture,.

'Bridge\* is analogous

A painter's idea.

An original picture... is a **bridge....81**

A copy of that picture

e. Analogy of proper proportionality with determinate diversity of proportions:-

Substance (v.g. lead)

is a **being.9**: 'Being\* is analogous.

Accident (v.g. shape)

f. Analogy of proper proportionality with indeterminate diversity of proportions; of this three examples are given:

fl. Analogy of being between God and creatures;-

A creature is a **being..10**: 'Being\* is analogous.

f2. Analogy of knowledge;-

Understanding is knowledge \_\_\_\_\_ 10: 'If knowledge\* is analogous.  
Sensation....

f3. Analogy of love:-

Intellective affect love. — . 10: 'Love' is analogous.  
Sensitive affection

g. Analogy of metaphoric proportionality with determinate diversity of proportions: of this three examples are given:-

g1. Analogy of 'sow and pigs\*:

A female pig with young..

A large rock with smaller are 'sow rocks surrounding it..... and pigs' ..... 11: 'Sow and pigs\* is analogous.

A large channel feeding smaller channels...

g2. Analogy of feeding;-

Giving food to an animal is feeding it. 11: 'Feeding\* is analogous.  
Pouring water into a channel.....

g3. Analogy of 'male and female\*:-

Animals.. are male and female..... 11; 'Male and female\* is analogous.  
Socket fittings

h. Analogy of metaphoric proportionality with indeterminate diversity of proportions: of this four examples are given:-

hi. Analogy of family;-

Parents and children....

Parents and litter. are a family. 12; 'Family\* is analogous.

A number of co-ordinated streams...J

h2. Analogy of anger;-

An animal

God. is angry. ,12: 'Angry' is analogous.

The sea..

h3. Analogy of threshold;-

Doorstep of a house. is a threshold... 12: 'Threshold\* is analogous.  
Initial concept of a science

## h4. Analogy of bride-groom

Christ (relatively  
to the Chiirch)... is a bride-groom,

12: 'Bride-groom' is  
analogous.

Yahweh (relatively  
to Israel)

155. ATTRIBUTION 3Y PRIORITY AND POSTERIORITY; As said above (n.152), in analogy of attribution or proportion, the character signified by the analogue is intrinsic to the PRINCIPAL analogate, but befits the SECONDARY analogates only through reference to the principal.

A. For this reason the Signified character is said to be:  
a. in analogy of attribution or of proportion, predicated:  
a1. by priority (per prius) of the principal analogate,  
a2. and by posteriority (per posterius) of the secondary analogates.  
b. Hence the QUESTION arises: Whether this manner of predicating:  
b1. pertains to every analogue (whether the analogue be of attribution or of proportionality),  
b2. or pertains to the analogue of attribution only?

B. Authors are not agreed upon this point: among Thomists opinions are as follows:

a. The affirmative opinion:  
a1. is held by:  
a1a. Blanche (Sur le sens de quelques locutions concernant l'analogie dans la langue de S.Thomas: Revue des Sc. Phil. et Theol., janvier 1921; La notion d'analogie dans la philosophie de S.Thomas: *ibid.*, avril 1921; L'analogie: Rev. de Phil., mai-juin 1923; line theorie de l'analogie: Rev. de Phil., janvier-fevr. 1932).  
a1b. who in this follows Ferrariensis.  
a2. According to this opinion:  
a2a. this distinction in manner of predicating belongs to every analogue,  
a2b. so that every analogue is defined relatively to some one, of which it is predicated by priority.  
  
b. But the contradictory opinion:  
b1. is held by:  
b1a. Ramirez (De Analogia secundum doctrinam Aristotelico-Thomisticam, p.75);  
b1b. Le Rohellec (Problemes Philosophiques, pp.114ss);  
b1c. Penido (Le Role de l'analogie en theologie dogmatique; Revue Thomiste, nov.1934, fevr.1935);  
b1d. Maritain (Les Degres du Savoir);  
b1e. Maquart (Elementa Philosophiae. I, pp.101-102);  
b1f. all of whom follow Cajetan,  
b2. These authors:  
b2a. admit indeed that every analogue is UNEQUALLY predicated of the analogates,  
b2b. But they deny that this unequal predication is necessarily made relatively to some one:  
b2b1. to one indeed, when it is an analogue according to attribution;  
b2b2. but to several diverse when it is an analogue according to proportionality.  
b3. Thus that analogue ALONE which is according to ATTRIBUTION ought to be defined in terms of PRIORITY AND POSTERIORITY (per prius et posterius).

C. This latter opinion is shown by the following considerations to be alone admissible:

a. For it is impossible that an analogue which is predicated INTRINSICALLY of all the analogates, be said of them RELATIVELY TO SOME ONE, unless they agree in one UNIVOCAL formal character, unequally

a1. This analogy of inequality, as Cajetan rightly calls it, merits the name of univocity rather than of analogy.

a2. Thus:

a2a. animality is :

a2a1. UNIVOCALLY.

a2a2. although univocally,

a2b. predicated of man and of amoeba.

b. But an analogue according to proportionality!

b1. consists in some formal character:

b1a. not univocal,

b1b. but only PROPORTIONALLY.

b2. UNEQUALLY participated by the diverse analogates,

b5. and this it consists "in this:

b3a. "that there is a same PROPORTION of two to DIVERSE things,

b3b. "as:

b3b1. "wavelessness to the sea,

b3b2. "and voidlessness to the air." (in V Metaphys. lect.8, ed.

Cathala, n.879).

D. For the understanding of the more difficult texts of St Thomas, IT IS TO be noted that St Thomas sometimes speaks of analogy IN THE ABSTRACT (in actu signato), and "sometimes speaks of analogy IN THE CONCRETE (in actu exercito).

a. When he speaks of analogy in the abstract, he always expressly distinguishes the diverse manner of predicating:

a1. of analogues of attribution.

a2. and of analogues of proportionality.

b. On the other hand, when he speaks in the concrete, in many places throughout his works he adduces examples in which it is question of analogates:

b1. which intrinsically have a character:

b1a. proportionally one in all,

b1b. YET ORDERED RELATIVELY TO SOME FIRST;

b2, because, in these cases, the two analogies (to wit, of attribution, and of proportionality) are found mixed.

c. The following (in I Ethic, lect.7, in fine) is one text MONO OTHERS, where this twofold manner of considering analogy is found:

c1. "One name is said" (he is speaking in the abstract.) "of many according to characters diverse not totally, but agreeing in some one: (he is speaking of analogy.' which is twofold):

c1a. "Sometimes indeed in this that they are referred TO ONE principle **but** sometimes in this that they are referred TO ONE end..... sometimes according to diverse proportions TO THE SAME subject." (He is speaking of analogy OF ATTRIBUTION OR OF PROPORTION, which is said through reference TO ONE.\*).

c1b. "Or according to one proportion TO DIVERSE subjects; for sight towards the body and intellect towards the soul have the same proportion. "Wherefore, just as sight is a power of a corporal organ, so **so** intellect is a power of the soul without participation of the body." (He is speaking of ANALOGY OF PROPORTIONALITY, which is not through reference to one, but TO DIVERSE things.)

c2. "Thus therefore" (he is speaking in the concrete.) (Aristotle) "says that good is said of many, not according to characters utterly **different...but** more according to analogy, that is, same proportion:

c2a. "Inasmuch as all goods depend upon ONE, **first** principle of goodness, or inasmuch as they are ordered to ONE **end**." (It is ACCORDING TO ANALOGY OF ATTRIBUTION.\*).

c2b. also all goods are said to be good more according to analogy, that is, same proportion, as sight is a good of the body, and intellect is a good of the soul (i.e. ACCORDING TO ANALOGY OF PROPORTIONALITY.)

o3. "THEREFORE;

c3a. "he prefers this third manner, "because it is taken according to goodness INHERENT" (i.e. intrinsic.) "to things" (or ACCORDING TO ANALOGY OF PROPORTIONALITY \_

c3b. "But the first two manners, according to a SEPARATED" (i.e. extrinsic.\*) goodness, from which not so properly is something denominated" (or according to analogy of extrinsic proportion or of attribution.\*)

d. NOR IS IT MOUGH TO SAY:

d1. Avith Blanche;

d1a. That in analogy OF PROBORTIONALITY;

dial, predication is made - by, priox^ity - of a principal analogate,

d1a2. while on the contrary it is made only by participation - therefore by posteriority - of the other analogates.

d1b. Therefore in both analogies:

d1b1. the character signified by the name is in the diverse smalogates by priority and posteriority,

d1b2. without the tvra analogies being rendered univocal; for the priority and posteriority (in one analogy it is intrinsic, in the other analogy extrinsic) are SB.IPLY diverse in the two analogies.

d2. For we may answer this by asking:

d2a. From which source in the case of analogy of proportionality comes this priority and posteriority?

dSb. ";7hich question must be answered thus:

d2b1. Not from the very analogy of proportionality itself,'

d2b2. but from an analogy of attribution annexed to it in the concrete "accidentally and obliquely" (per accidens et in obliquo), as Ramirez well says. (Op. cit. p.81, n.2).

156. DIVISION OF PREDICATE ACCORDING TO UNITY OF SIGNIFICATION; Accordingly predicates are divided on the score of the unity of their signification as predicated of many subjects, as shown in the follovding schematic illustration

either EVEN UNTO BSUAU' ; as v/hen man is said of Peter .and Paul.

either UNIVQCAL:  
and then

or/V/ITH INETjUALITY; (and then is had "analogy of inequality"); as v^hen animal is said of man and amoeba.

Predicate is

either according to CONTRIBUTION or EXTRINSIC PROPORTION; as when healthy is said of normal organic constitution and of climate.

either an ANALOGUE;  
and then

either according to PROPER PROPORTIONALITY; as when being is said of God and a creature.

or according to PROPORTIONALITY;  
and then

or a HOMOITO^;  
and then

or according to IETAPHORIC PROPORTION-ALITY; as when angry is said of an animal and the sea.

or SBIPLY EQUIVOGAL; as when tick is said of a certain animal and a certain sound.



## CHAPTER ELEVEN.

## SUAREZIAN CONCEPTION OF ANALOGUE COMPARED WITH THAT OF ST THOMAS.

157. SUAREZIAN NOTION OF ANALOGUE: Whereas according to ST THOMAS, analogues are those concepts whereof the character signified is SIMPLY DIVERSE and secondarily (secundum quid) the same; ' ,

A. According to SUAREZIAN doctrine analogues ought to "be defined as those whereof the signified character is SECONDARILY DIVERSE and simply the same.

a. This opposition between Suarez and St Thomas is thus exhibited

SIMPLY DIVERSE,

according to ST THOMAS, is

The character  
signified by  
an analogue:

SECONDARILY DIVERSE.

according to

SIMPLY THE SAME.

b. This notion, if not in express terms, at least in substance, is found in Suarez;

b1. as Descoqs, a leading Suarezian, acknowledges in his work: 'Institutiones Metaphysicae Generalis' (t.I, p.210), where he writes:

b2. "It is to be admitted that Garrigou-Lagrange spoke not without foundation when he has interpreted the mind of the disciples of Suarez as regards analogy."

B. The foundation of the doctrine of St THOMAS is his moderate realism:

a. according to which the metaphysical universal is the VERY REAL NATURE ITSELF:

b. wherefrom it follows that the objective concept which represents that universal is the very THING known (\*objective concept THING as Descartes puts it: op.cit. p.240).

' C. But;

a. The foundation of the doctrine of SUAREZ is his conceptualism:

al. according to which:

ala. the metaphysical universal:

alal. IS NOT THE VERY REAL NATURE ITSELF.-

ala2. but an INTENTIONAL REPRESENTATION OF THE NATURE.

alb. or an objective concept which signifies:

albl. NOT THE VERY THING known,

alb2. but only a REPRESENTATION OF THE THING (>objective concept CONCEPT\*

as Descoqs puts it: op.cit. p.240).

b. Wherefore:

b1. on account of the distinction of the objective concept and the thing known,

b2. Still, it can avoid univocity: for, as Descoqs says:

b2a. "This being supposed,

b2al. "it is clear that the unity of analogy. — ...is ALREADY NOT IN THING, for those things are simply diverse,

b2b. "wherefore it cannot be attributed save to the concept, insofar as it is compared to the things themselves and represents them." (Op.cit. pp.143-144).

158. SUAREZIAN DIVISION OF ANALOGY: Whereas for ST THOMAS analogy of ATTRIBUTION is always extrinsic:

A. This analogy for SUAREZ is sometimes extrinsic, sometimes intrinsic:

§' Extrinsic analogy of attribution, for Suarez. is metaphoric; "The name is attributed to the secondary analogate only improperly as by metaphor", (Disput, Metaphys. t.26, p.17, n.14).

a1. This logically follows from his notion of analogy (whereof the character signified is SIMPLY the same),

a2. for, as Suarez says, in this extrinsic analogy "there is not had one concept common to all the aoialogates because the form wherefrom it is taken:

a2a. "is intrinsically and properly in one only.

a2b. "in the others tropologically" (i.e. figuratively) "and by extrinsic dgaomination." (ibid)\*^

b. But:

b1. INTRINSIC analogy of attribution is "MOST PROPER" (ibid.),

bla. For "there is had a formally common and objective concept because the analogates are properly and intrinsically such, and truly agree in such a character, which the mind can abstractly or precisely conceive by one concept common to all." (ibid. n,15).

bib. This analogy corresponds to the analogy of proper proportionality of St Thomas.

b2. But:

b2a. It is not expressed, as in St THOMAS, under the form of some proportionality, because, since it is a concept SIMPLY ONE,

b2a1. proportionality disappears - for proportionality requires FOUR terms SIMPLY DIVERSE - ,

b2a2. and there remains only an unequal attribution:

b2a2a. by priority of the first analogate,

b2a2b, and by posteriority of the others.

b2b. Thus:

b2b1. the notion, simply one, is said by priority of God and by posteriority of creatures.

b2b2. However:

b2b2a. in the doctrine of ST THOMAS.

b2b2a1. since being is simply DIVERSE,

b2b2a2. we must say.; "As being is to God, so being is to creatures" in similar fashion as we would say: "As two is to four, so three is to six": which may be thus shown schematically

Being	being		23
—'	—	is to be said as we say	— := —
God	creature		4 6.-

b2b2b. But if being is simply ONE;

b2b2b1. then we cannot say: "As being is to God, so being is to creatures", thus:-

Being	being
God	creature

b2b2b2. for this would be the same as to say: "As two is to four, so two is to six", thus

2	2
4	6

B. This notwithstanding, SUAREZ admits an analogy of proportionality. WHICH HOWEVER IS METAPHORICAL.

a. For this analogy cannot be found in those analogues wherein a character SIMPLY THE SAME is formally intrinsic to all the analogates: for of every proportionality, as said Just above, all the terms must be simply diverse.

m  
i:

"b. Nor can it be found in those whose intrinsic character is virtual in one and formally in another: because in this case the character is not simply one.

c. Therefore this analogy of proportionality is not verified save extrinsically and CONSEQUENTLY BY METAPHOR;

c1. For which reason Suarez writes; "Every true analogy of proportionality includes something of metaphor and of properness." (Op. cit. t.26, p.16, n.11).

c2. For:

c2a. by reason of metaphor, a character;

c2a1. on other scores simply diverse, and therefore not really analogous,

c2a2. retains metaphorical unity necessary to save Suarezian analogy,

c2b. notwithstanding which it has the four terms really simply diverse necessary to establish proportionality.

159. OPPOSED DIVISIONS ILLUSTRATED: The opposition of the two divisions of analogy is illustrated thus:-

	IN ST THOMS		IN SUAREZ
Analogy is divided into	[of attribution (extrinsic)		extrinsic
		of attribution	
	proper		intrinsic
	of proportionality		of proportionality (metaphoric)
		metaphoric	

SECTION FOUR.

THE SIGN OF THE UNIVERSAL, OR DEFINITION.

160. ORDER OF PROCEDURE; This treatment of definition;

A. since definition is:

a. a locution or discourse' or speech, and indeed a locution or discourse or speech,

b. which is a "mode of knowing",

c. and indeed that mode of knowing which is the sign of the universal,

d. and whereof the principal instrument is division;

B. therefore will deal:

a. First, with locution or discourse or speech,

b. Secondly, with the "modes of knowing";

c. Thirdly, with definition itself;

d. Fourthly, with its principal instrument, namely, division.

C. Hence the following order:-

On speech or locution or discourse,..Chapter twelve.

Pre-anibles

[On the "modes of knowing".Chapter thirteen.

On definition On definition **itself.....Chapter** fourteen.

On its principal instrument, viz, division,.....Chapter fifteen.

## CHAPTER TV/ELVE.

### SPEEQ^ LOCUTION OR DISCOURSE.

161. NATURE OF SPEEiCH OR LOCUTION OR DISCOURSE (ORATIO) : **If this bo said:**  
"Man is an animal":

-A. Then there is had;

a. Voice-sound conventionally **significative**; as has been explained above (nn.61-64).

al. And indeed in this, the example given does not differ from a term, such as a noun or a verb, (n.66), but "agrees with nom and verb" (in Periherm. I, lect.2, n.2)..

a2. Yet there is, in the example given something "**wherein.....it** differs from noun and verb" (ibid.).

b. YHiereof the parts, if separated, signify something; thus the part \*man\* , if talcen out from that whole', signifies something; and similarly the part 'animal'; and similarly the part 'is'.

b1. And here we have "that wherein discourse differs from noun and verb." (ibid.).

b2. For, as explained above (n.66), of a noun or of a verb "no part, if separated, signifies".

c. But the parts indeed, if separated, signify something as a diction, not as an affirmation or negation:

cl. As a diction indeed, that is, as a term; for the parts of that whole are terms, to wit:

cla. nouns,

clb. and verb.

c2. But not, as affiraiation or negation; for no part of that vdiole signifies affirmation or negation:

c2a. each part being noun or verb,

c2b. whereas affirmation or negation is signified by voice-sound "which is composed from noun and verb" (ibid.).

3. Such VOICE-SOUNDS COLWEITIONALLY SIGNIFICATIVE. Y/HEREOF THE PARTS, IF SEPARATED. SIGNIFY SOi-THING AS A DICTION. NQT AS AFFIRMATION OR NEGATION, is called LOCUTION, OR DISCOU'RSE. or SPEIX3H (CRATIO). (periherm. 16b, 26).

a. But NOTE:

al. That some discourse;

ala. can be composed from affirmations and negations as from parts, as in this example: 'Peter, who is a musician, is very old';

alb. But then each of these affirmations or negations is composed from 'dictions' or terms.

ale. And this example is a composite discoiorse.

aid. Wherefrom it is clear that what is essential to discourse is that its parts, if separated, signify "as dictions" or terms.

b. NOTE ALSO;

b1. That discourse differs from complex term (n.49. A) ;

bla. For a complex term is a complex of terms ('wise man') signifying several essences, as this complex of terms is only a part of some whole (the whole being a discourse), and therefore as this complex of terms is not a whole by itself.

bib. Whereas discourse:

blbl. is a sign of a composite understanding;

blbla. whether of one essence (as in definition, v.g. 'rational animal'),

blblb. of several essences (as 'wise man'),

blb2. but always as taken as a whole by itself.

b2. Wherefore SPEECH or DISCOURSE or LOCUTION may be defined also: VOICE-SOUND. WHICH IS A TERM. SIGNIFYING COMPOSITE UNDERSTANDING. ( Cf. In I Periherm. lect.5 )

c. Accordingly, like a term:

cl. locution or discourse is an accidental concrete from matter (or subject) and form:

cla. its matter indeed is voice-sounds or vocables;

clb. but its form is composition of significations.

c2. And therefore a term which signifies an entire judgment (v.g. 'video '),

c2a. formally is not a discourse,

c2b. but:

c2bl. formally it is a term,

c2b2. though virtually it is a discourse, for virtually it is this: [ ego video - I see ].

162. DIVISION OF DISCOURSE; Let us take;

A. These examples;

a. 'man is mortal';

b. 'rational animal' ;

c. 'wise man' ;

d. 'as he went past';

e. 'The spiritual is-incorruptible;

but human soul is spiritual;

therefore human soul is incorruptible'.

f. 'O Peter';

g. 'is Peter sick?'

h. 'light a fire' (ignem accende);

i. 'please light a fire' (ignem accendas);

j. 'would that you would light a fire ' (utinam ignem accendas);

B. All these examples except the second, third, and fourth

a. Beget in the mind of the listener a perfect understanding, not leaving the listener's intellect in suspense:

b. For which reason they are called PERFECT discourses.

c. For PERFECT discourse is: DISCOURSE "WHICH GENERATES A PERFECT SENSE IN THE MIND OF THE HEARER" (in I Periherm, lect.7).

C. But the second, third and fourth examples (to wit: 'rational animal', 'wise man', 'as he went by') :

a. do not beget in the mind of the listener a perfect understanding, but rather leave his intellect in suspense;

b. For which reason they are called IMPERFECT discourses:

bl. discourses indeed, because they constitute a whole by themselves

- thus differing from a complex term;

bla. for 'wise man' as it is in a discourse, consists of two terms which do not constitute a whole by themselves; wherefore 'wise man' as it is in a discourse is merely a complex term;

hlb. whereas 'wise man' as it stands alone outside some discourse wherein it would be a mere part, consists of two terms which constitute a whole by themselves: wherefore 'wise man' as it is not part of some discourse

is thus, not a discourse, but a complex term which begets a perfect SENSE IN THE MIND OF A HEARER.

D. But not all those other examples, which are discourses, have themselves-in the same way:

- a. For one of them (to wit: 'man is mortal') is ENUNCIATIVE;
- al. For it expresses a judgment of the mind or an affirmation (or negation).
- a2. For ENUNCIATION is DISCOURSE SIGNIFYING AN AFFIRMATION OR NEGATION; or, as we shall see later, DISCOURSE SIGNIFYING THE TRUE OR THE FALSE BY INDICATING.

h. But another of those examples, to wit, the fifth, (which is this: 'The spiritual is incorruptible; but human soul is spiritual; therefore human soul is incorruptible') is ARGUMENTATIVE;

hi. For it is the sign of a reasoning,

h2. For ARGUMENTATION is DISCOURSE SIGNIFYING THE SEQUENCE OF ONE FROM ANOTHER.

c. But the last five of those examples (to wit: 'O Peter'. 'Is Peter sick', 'Light a fire'. 'Please light a fire'. 'Would that you would light a fire') are ORDINATIVE;

c1. For they express an ordinance of the intellect that something be done in the real.

c2. This ordinance of the intellect:

c2a. although it is not a Judgment,

c2b. nevertheless:

c2h1. supposes a Judgment of the intellect,

c2h2. and moreover a choice of the will,

c2c. inasmuch as it is a practical dictate.

d. But these ordinations are to be distinguished;

d1. according as:

d1a. the first ('O Peter') is VOCATIVE;

d1h. the second ('Is Peter sick?') is INTERROGATIVE;

d1e. the third ('Light a fire') is IMPERATIVE;

d1d. the fourth ('Please light a fire') is DEPRECATIVE;

d1e. the fifth ('Would that you would light a fire') is OPTATIVE.

d2. Which division is thus explained by St Thomas;

d2a. "Because intellect or reason not only conceives in itself the truth of some thing only, but also to its office it pertains to direct and order other things according to its concept, therefore it was necessary that. Just as through enunciative discourse is signified the very concept of the mind, so also there be other discourses signifying an order of reason, according to which other things are directed.

d2h. "But from the reason of one man another man is directed to three things:

d2h1. "first indeed, to attend mentally; and to this pertains VOCATIVE DISCOURSE.

d2h2. "secondly, to respond vocally; and to this pertains INTERROGATIVE DISCOURSE.

d2h3. "thirdly, to execute in deed. and to this pertains;

d2h3a. "as regards inferiors, IMPERATIVE DISCOURSE;

d2h3h. "but as regards superiors, DEPRECATIVE DISCOURSE; to which is reduced OPTATIVE DISCOURSE; because with respect to a superior man has no motive power save through the expression of his desire." (IN I Periherm. lect.7, n.5).

E. Which division of discourse or locution may be thus exhibited schematically

either BIPEREECT.

[Either ENUNCIATION, or PROPOSITION.

SPEECH or  
DISCOURSE or  
LOCUTION is

or ARCrUISITOATION.

or PERFECT;  
and then  
it is

either to attend mentall') and then  
it is VOCATION, or CALL.

or to respond vocally: and then it  
is INTERROGATION, or QUESTION.

or ORDINATION;  
which may be

either towards inferiors;  
and then it is BIPERATION,  
or COMiAND.

or to  
execute  
in deed; or towards superiors; and  
and then then it is DEPRECACTION or  
— PRAYER (to which is reduced

P. It is to be noted that among imperfect discourses the chief place  
is held by those which are "modes of knowing", to wit;

- a. definition;
- b. and division.

## CHAPTER THIRTEEN.

### THE MODES OF KNOWING.

163. NOTION OF "MODE OF KNOWING"; At the beginning the human intellect  
knows nothing perfectly, but its knowledges are obscure or confused,  
or doubtful.

A. But the logical instrument, or instrument which our intellect uses  
to perfect its knowledge is called a "MODE OF KNOWING".

B. Therefore a MODE OF KNOWING is defined: A DISCOURSE MANIFESTATIVE  
OF SOME UNKNOWN - 'ORATIO ALICUIUS IGNOTI MANIFESTATIVA'.

- C. In which definition 'unknown' is taken for;
- a. 'obscure',
  - b. or 'confuse',
  - c. or 'doubtful'.

164. DIVISION OF THE MODI OF KNOWING; The unknown to be manifested may be  
either something incomplex (simple) or a complex truth.

A. That which is incomplex, or the simple essence of a thing, is  
manifested:

- a. as regards its constitution, by DEFINITION;
- b. as regards its parts, by DIVISION.

B. But a complex truth, i.e. a logical truth, which is found only in  
judgment, which is (logically) complex, is manifested by PROOF or ARGUMENTATION.

- C. Therefore the modes of knowing are three, to wit:
- a. DEFINITION.
  - b. DIVISION.
  - c. ARGUMENTATION.

- D. BUT. HOTE;
  - a. That TEffl.! is not a logical instrument or mode of knowing save  
I'emotely:
    - al. For not by terms do we perfect our knowledge, save insofar as they are conjoined to each other in some special way, cr, in other swords, save insofar as from them are formed definitions, or divisions or arg'jmentations
    - a2. which themselves are the very modes of knowing here in question.
  - b. That sensible experience whereby we know the truth of a fact, is not a mode of knowing, for the truth of a fact known by sensible experience does not need a medium whereby to be manifested.
  - c. That faith, whereby something is believed on account of the testimony of a witness, is not a mode of lknowing, because:
    - c1. it does not manifest the thing itself,
    - c2. but loaves it obscure.
  - d. that LOGIC itself is indeed a mode of knovTing:
    - d1 in universal,
    - d2. but not in special.

CHAPTER POURTEHL

DEFINITION ITSELF,

165. ORDER OF PROCEDURE; The treatment of definition itself:

- A. Will consider:
  - a. First, the nature of definition.
  - b. Secondly, the species of definition.
  - c. Thirdly, the laws of definition.
  - d. Fourthly, the origin of definitions: which mil be considered:
    - d1. In the first place, in general;
    - d2. in the second place, in special: which is the consideration of  
the pursuit of (^efinition, v\,hich mil be dealt \¥ith:
      - d2a. as to its. nature;
      - d2b. as to its modes.
- B. Hence the following order
  - Its nature. .. — iArticle one.
  - Its species..Article two.
  - On defi- Its laws. Article three.  
nition  
itself: in general — — Article four.
  - Its origin Nature thereof...Article five.  
in special: Its pursuit Modes thereof....Article six.

artictj: one.

NATURE OF DEFINITION.

166. DERMITION OF DEFINITION: The reason Y/hich necessitates definition Y/ill manifest its nature.

A. And indeed the natural imperfection of our intellect:



a.« which only step by step and only by the aid of several concepts distinctly apprehends the natures of things

h. requires the substitution:

bl. of some locution signifying the composite understanding or the several concepts of the same thing<sub>3</sub>

b2. for the vocable signifying that thing by a single concept.

B, But:

a. This substitution:

al. which not only signifies the things

a2. but manifests it,

b. is called the act of defining.

C. Therefore DEFINITION is "A LOCUTION SIGNIFYING-WITH SOMETHING - ORATIO SIGNIFICANS QUOD QUID EST". (In II Post. Anal, lect.2).

a. Let us take the definition of man: 'rational animal',

al. This definition:

ala. consists of two concepts, to wit;

alal. the concept 'animal'.

ala2. and the concept 'rational':

alb. but both are concepts about the same essence.

a2. It is otherwise if one says: 'wise man' :

a2a. To these vocables correspond indeed;

a2al. two concepts,

a2a2. yet expressing two essences, to wit, the essence 'man' and

the essence 'wisdom'

a2a3. and therefore it is a complex concept (cf. n.49, A.b).

a2b. But:

a2bl. 'rational animal' is a composite understanding of an incomplex concept (cf. n.49, A.a),

a2b2. and for that reason definition is said to be a *locutio*.

a3. For LOCUTION is defined: VOICE-SOUND SIGNIFYING A COMPOSITE UNDERSTANDING - whereas the sign of a complex concept is a complex term (cf. n.65).

b. But this locution or discourse is imperfect:

bl. since its object is:

bla. an imperfect understanding or an object of simple apprehension:

bib. not an object of judgment.

b2. And therefore this locution or discourse is said to signify:

b2a. 'that which something is' (cf. nn.16, 25j).

b2b. not affirmation or negation.

#### ARTICLE TWO.

#### DIVERSE SPECIES OF DEFINITIONS.

167. NOMINAL AND REAL DEFINITION: However;

A. The manifestation of some defined is accomplished:

a. whether by the unfolding of its sign, i.e. of its name

b. or by the unfolding of the signified, i.e. of the nature signified.

B. Hence a twofold genus of definitions, to wit :

a. definition of the name, or NOMINAL definition;

b. and definition of the thing, or REAL definition.

168. SPECIES OF NOMINAL DEFINITION: But nominal definition is divided into two species:

A. For a nominal definition;

a. unfolds:

- a1. either the ETYMOLOGY OF THE ITME,
- a2. or its COMMISSION SIGNIFICATION, or meaning,
- h. If/herefore there are two nominal definitionsj to wit.
- hi. ETYMOLOGICAL definition,
- b2. and VULGAR or POPULAR or COMMON-SENSE definition.

B. It is to be noted that "other is the etymology of a name, and, other its signification.

a. "For its etymology is taken according to that wherefrom the name is imposed for the purpose of signifying;

b. "But the signification of a name is taken according to that whereupon the name is imposed for the purpose of signifying it.

c. "Which sometimes are diverse:

c1. "for the name 'lapis' (stone) is imposed from 'laesio\_pQdis (hurting of for^t);

c2. "yet it does not signify this: otherwise iron, since it hurts the foot, would be a 'lapis' (stone). (II-II, q.92, a.1, ad 2).

C. Accordingly:

a. ETYMOLOGICAL definition:

a1. is most incomplete,

a2. and has itself in science quite immaterially., and secondarily,

h. On the other hand:

hi. VULGAR definition, even when very imperfect:

h1a. is the foundation of the real definition,

h1a1. For it "is based in common sense,

h1a2. and signifies the quiddity of the name, as Caietan explains

in the following words:

h1a2a. "Just as the 'what' of a thing (quid rei) is the quiddity of the thing (quidditas rei), so the 'what' of the name (quid nominis) is the quiddity of the name (quidditas nominis).

h1a2h. "But a name:

h1a2h1. "since it is essentially a note of those conceptions which are objectively in the mind (from 1 Periherm. 16 a 3;.,

h1a2h2. "has no other quiddity save this that it is the sign of some thing understood or thought:

h1a2c. "But sign, as such, is relative to signed.

h1a2d. "Wherefore to know the 'what' of a name is naught else than to know to what such a name has relation as sign to signed.

h1a2e. "But such knowledge can be acquired through the accidentals of that signed, through its common (characters), through its essentials, through modes, and in any other way, just as if a Greek, when we ask him the 'what' of the name 'anthropos', points out a man with his finger, we at once perceive the 'what' of the name." (in 'De Ente et Essentia', prooemium, n.s., ed. Laurent p.19;.

h1h. Y/hence it appears that the 'what' of a name, which is, as Caietan explains, the quiddity of the name, is nothing else than what the name means or signifies.

h2. Wherefrom it is apparent that by VULGAR definition something of the thing is already known, though confusedly. (Cf. n.51, C.a).

169. SPECIES OF REAL DEFINITION: Real definition manifests an essence DISTINCTLY.

A. Therefore this manifestation is made in as many ways as there are ways in which an essence can be known distinctly. (cf. n.61, C.h).

B. Therefore real definition is manifold:

a. The definitions of 'meji', to wit: RATIONAL ANIMAL, or BEING. CONSISTING OF BODY AND RATIONAL SOUL, which EXPRESS THE ESSENTIAL PRINCIPLES of reason, are called ESSENTIAL DEFINITIONS.

a1. But of these:

a1a. The former, to wit 'rational animal', is METAPHYSICAL (cf. I, q.1B, a.4; I-II, q.1, a.3), because it is made through a general and a specific difference, which are not really distinct from each other.

alb. But the latter, to wit 'being consisting': of body and rational soul', is called PHYSICAL (cf. In Boeth. V, 3), because it expresses the physical, or really distinct, principles of the essence,

a2. Such definitions:

a2a. are, as is clear, the most perfect,

a2b. but they are not always possible, because in most cases we do not know the specific difference of things. (Cf. n.51, D.b).

a5. Even further:

aba. of each of these definitions is it true that it is formal only:

abal. in philosophy,

a5a2. and in mathematics;

abb. but not in the positive sciences which do not know essences save THROUGH OBSERVABLE OR EXPERIMENTAL PROPERTIES; as is manifest from the definitions of chemical bodies.

b. A definition of this kind is called DESCRIPTIVE:

b1. But:

b1a. Not all descriptive definitions are made through properties or PROPER accidents.

b1b. Descriptive definition is also made through COMMON accidents, but so enumerated that not all are found together in another: such is the definition of man: 'two-legged, featherless, upright, animal, emitting speech-sounds, emitting laughter-sounds'.

b2. Inhereas:

b2a. descriptive definition through properties is called PROPER definition,

b2b. descriptive definition through common accidents is called ACCIDENTAL definition,

bb. NOTE WELL:

bba. that PROPER descriptive definition:

bbal. which is found:

bbala. both in philosophy (v.g. 'social animal' as a definition of man),

bbalb. and in positive science,

b3a2. does not express in each of these genera of disciplines THE SAME properties.

bbb. For proper descriptive definition expresses:

bbb1. in philosophy the PHILOSOPHICAL properties which immediately flow from the essence,

bbb2. but in positive science the SCIENTIFIC, or observable or empiriological 'properties', which ARE ONLY SIGNS of the philosophical properties, which latter are impervious for positive science.

c. Besides those definitions, there is also CAUSAL DEFINITION, which expresses an essence THROUGH ITS EXTRINSIC CAUSES, to wit, Unmoved cause, efficient cause, or exemplary cause.

c1. Thus:

cla. If human soul be defined: 'form immediately created by God',

clal. there is had a DEFINITION THROUGH EFFICIENT CAUSE:

cla2. and indeed a CAUSAL definition, which is: DEFINITION INDICATING THE PRODUCTIVE CAUSE OF A THING.

clb. But often, especially in mathematics, it INDICATES THE MANNER OF PRODUCTION OF A THING; as when circle is defined: 'plane figure resulting from the movement of a straight line revolving about its fixed extremity': and then it is called a GENETIC definition.

c2. But:

c2a. If human soul is defined: 'soul whose end is enjoyment of God':

c2b. there is had DEFINITION THROUGH FINAL CAUSE, which is DEFINITION INDICATING THAT ON ACCOUNT OF WHICH THE THING IS MADE.

c2c. And:

c2c1. "since end (is) the cause of causes.....

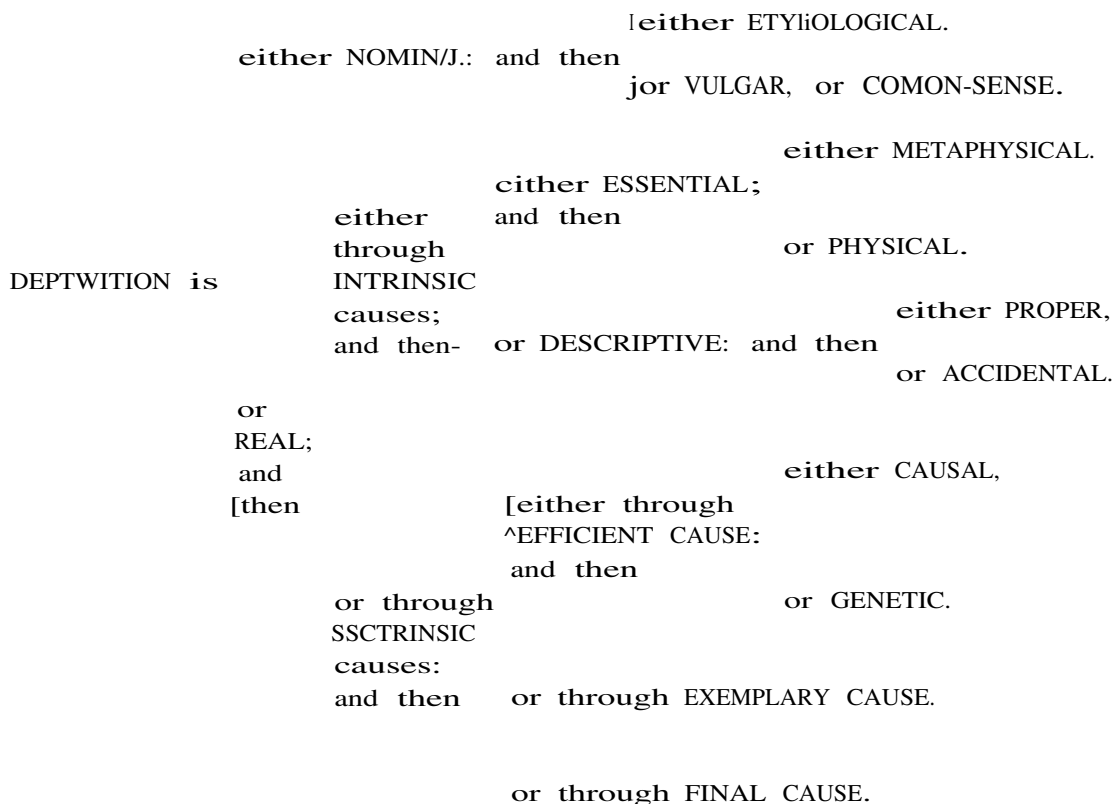
c2c2. "definition which is taken from end is more formal among all definitions." (in II Sent, d.9, q.1, a.1 ad 1).

cb. But:

cba. If human soul is defined: 'image of God'

ebb. then is had DEFINITION THROUGH EFFICIENT CAUSE, which is DEFINITION INDICATING THAT UNTO THE CAUSE OF WHICH THE THING IS MADE.

170. SCHEMATIC SUMMARY: Accordingly the division of definition may be thus exhibited schematically



-ARTICLE THREE.

#### LAWS OF DEFINITION.

171. LAWS OF THE THING TO BE DEFINED: Of the laws which concern definition, three regard the THING to be defined:

A. FIRST LAW! THE THING TO BE DEFINED MUST BE UNIVERSAL, (in II Post. Anal., lect.2).

a. For definition is a sign of the universal, (cf. n.22).

b. And so the singular cannot be defined. Cf. In VII Metaphys. lect. 15, ed. Cathala n.1611),

B. SECOND LAW:- THE THING TO BE DEFINED MUST BE ONE NATURAL (UNIVERSAL PER SE)

a. For otherwise there would be many to be defined. (Of. in VII Metaphys. lect.4; ed. Cathala n.1359).

b. Therefore:

b1. by essential definition, simply speaking complete substance alone can be defined;

b2. whereas:

b2a. on the other hand :

b2a1. incomplete substances,

b2a2. and accidents,

b2b. are defined "through an added" (I, q.76, a.8 ad 2; I, q.4C, a.1; Q.Disp. de Anima, a.9, ad 15 et ad 7j Quodlib. IX, a.6 ad 3), or, in other words, through something which is outside the essence of the defined.

(Quodlib. IX, a.5 ad 1; De Pot. q.8, a.4 ad 5; De Verit. q.16, a.1 ad 8j In II Sent. d.35, a.1, a.2 ad 1).

C. THIRD LAW: THE THING TO BE DEFINED MUST BE CONTAINED UNDER A GENUS.

a. For:

a1. Since definition is manifestative of the thing,

a2. definition must be made through those concepts which are prior.

(Cf. n.144).

b. But genus and difference manifest the essence of a thing. (Cf. In VII Metaphys. lect. 5<sup>th</sup> ed. Cathala, n.1527).

172. LMS OF DEFINITION ITSELF: And three other laws regard the DEFINITION itself:

A. FIRST LAW: THE DEFINITION MUST BE CLEARER THAN THE DEFINED.

a. For otherwise the definition would not be manifestative of the defined.

h. Therefore the defined ought not enter the definition:

hi. for otherwise there would be a circle in defining,

h2. and hence no manifestation of the defined. (Cf. In I Metaphys. lect. 9, ed. Cathala n.158).

B. SECOND LAW: THE DEFINITION OUGHT NOT BE MADE THROUGH GENUS AND DIFFERENCE.

a. "And Because this condition:

al. "not only embraces essential definition in which genus and difference are properly found,

a2. "but also accidental and descriptive (definition) in which genus and difference are not properly, but something INSTEAD OF THEM,

h. "Therefore we understand:

hi. "by the name 'genus'. SOMETHING COMMON.

h2. "by the name 'difference' SOME PARTICULAR DISTINCTIVE." (John of St Thomas. Cursus Phil, I, c.3, p.19).

C. THIRD LAW: THE DEFINITION MUST BE NEITHER BROADER NOR NARROWER THAN THE DEFINED. BUT COHERENT WITH IT.

a. For otherwise the definition "does not unfold the nature (of the defined) ;

al. "for it attributes to it something, which it has not,

a2. "or takes from it something, which it has." (John of St Thomas. *ibid.*).

h. Thus:

hi. If man is defined 'sensitive living body', the definition is broader than the defined, and "takes from it something", to wit, 'rational', "which it has."

b2. But if man is defined 'educated animal', the definition is narrower than the defined, and "attributes to it something", to wit, 'education', "which it has not."

#### ARTICLE FOUR,

#### ORIGIN OF DEFINITIONS.

173. NOT THROUGH DEMONSTRATION: Not through demonstration is definition obtained. (Post.Anal. II, c.8, n.13; c.3; c.4; Comro.S.Thomae in hos locos, lect.7 in fine; lect.2 et 3).

A. For if definition were obtained through demonstration, then the conclusion of the syllogism would be convertible, for:

a. the subject would be the defined,

b. and the predicate would be the definition.

B. But to obtain such a conclusion:

a. the premisses would need to be convertible;

b. and therefore M would need to be a definition of the defined (i. e. of o).

c. Therefore the demonstration would be such as this:-

M		P
'A social animal	, IS.	a rational animal.
S		M
But.....(		.... a social animal.
S		P
Therefore.. ) •. marx. >.....		.. .. a rational animal.

C. Therefore this demonstration would already suppose a definition.

174. **NOR THROUGH INDUCTION PROPERLY SO-CALLED:** Neither through induction properly so-called is definition obtained.

A. For induction properly so-called is concerned with propositions.

B. But definition pertains to the first operation of the mind.

175. **THEREFORE THROUGH ABSTRACTION:** It follows that definition is obtained through abstraction.

A. But this abstraction is not effected by one single act.

a. For our intellect, by one single act, abstracts only most confused concepts,

b. which are not sufficient for the manifestation of the defined.

B. ifhence the necessity of definition,

a. which substitutes diverse concepts for the defined;

b. and therefore the labour of finding a definition consists in seeking the concepts whereof the definition is composed.

C. This labour is called PURSUIT of a definition (venatio definitionis). (Post. Anal. II; Comment. S.Thomae, lect.16).

## ARTICLE FIVE.

### NATURE OF PURSUIT OF DEFINITION.

176. **EQUIPMENT PRE-REQUIRED:** For the undorstandixig of the pursuit of a definition, it is to bo noted:

A. That the thing to be defined is knowm confusedly (i.e. according nominal definition) before it is defined.

a. For otherwise there v/ould be no knowledge of what one is seeking to defin c.

b. Nor would the definition be known to be good v.hen it has been obtained.

B. But before the defined is known:

a- its genus is known, NOT INDEED AS IT IS PART OF THE DEFINED, but AS IT IS in' ITSELF.

a1. For the more universal is known before the less universal;

a2. but the defined is less universal than the genus which must enter the definition,

b. Thus:

b1. "animal considered in itself is before man in our knowledge;

b2. "but man is earlier in oior knowledge than that animal is part of his nature." (I, q,85, a.3 ad 2).

177. **DIVERSE PRIORITIES:** "Thus **accordingly.....the** defining concepts" (i.e. the elements of the definition):

A. "Absolutely considered, are known before the defined: otherwise the defined would not be made known through them.

B. "But according as they are parts of the definition, thus they are known **after it**.

a. "For we know man by a certain confused knowledge,

b. "before we know; to distinguish those characters which are of the nature of man." (ibid, ad 3; cf. In I Phys. lect.1).

178. **NATURE OF THE PURSUIT:** Therefore the whole labour of the pursuit of a definition consists in determining such defining concepts AS THEY ARE PARTS OF THE DEFINED.

#### ARTICLE SIX.

##### MODES OF PURSUIT OF DEFINITION.

179. **WAYS:** There are two ways of pursuing definition, to wit:

A. The **DESCENDING WAY** or WAY OF DIVISION. (Post. Anal. II; Comment. S.Thomae, Lect.14-15).

B. The **ASCENDING WAY** or WAY OF COMPOSITION. (Post.Anal. II; Comment. S.Thomae, lect.16).

180. **DESCENDING PURSUIT:** Since "every good definition, that it may unfold **its** nature, ought to unfold it through that which is common to it with others and through that which is proper to itself and distinguishes it from all others." (John of St Thomas, Cursus Phil. I, p.19):

A. The descending pursuit of a definition **QUOT** to:

a. **STATE THE SUPREME GENUS OR CATEGORY OF THE THING TO BE DEFINED:** Which is easily done, since:

a1. On the one hand, already before the real definition, the thing to be defined is known confusedly or, in other words, by nominal definition (n.172, a);

a2. and on the other hand, the genus of the thing to be defined is known in itself, as being more universal (n.172, B).

b. **DIVIDE THROUGH OPPOSITE DIFFERENCES. PROPER AND IMMEDIATE:**

b1. Through **OPPOSITE** differences indeed:

b1a. That is, as substance is divided through extended and inextended, or through simple and composite, or through material and immaterial; - (simple and inextended would not be opposite; nor would biped and irrational be opposite, as is evident from bird; nor would biped and rational be opposite, as is evident from man).

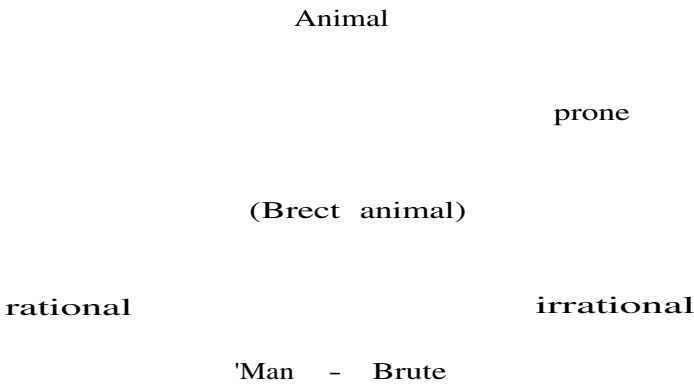
b1b. The reason of this condition is that otherwise:

b1b1. either the members into which the genus is divided do not exhaust the genus, but leave a gap; and it might happen that the thing whereof the definition is sought lies in that gap. (Thus biped and rational do not exhaust animal, but leave a gap, in which gap dog lies);

b1b2. or the members do not exclude each other, and accordingly do not differ from each other. (Thus biped and irrational do not exclude each other, as is evident from bird!)

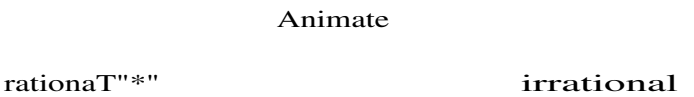
b2. but through **PROPER** differences:

- b2a. That is^ through differences not found beyond the genus, (Thus, if animal were divided through erect and prone, or through white and not-white. these differences are found outside animal:
- b2al. for erect and prone are found in plant: for a plant is either erectj as a tree; or prone, as a vine,
- b2a2. and white and not-white are fo\nd in minerals.
- b2b. The reason of this condition will be clear from an example:
- b2bl. Let this example be taken:-



b2b2. Then it is implied that 'brute' is an inferior of X (erect animal), so that X would be necessarily t;redicated of brute: which is false, for there are animals which are prone (as worm), and whereof 'erect' cannot be said.

- b3. And through S-G-EIDIATE differences:
- b3a. That is, through differences constitutive of inferiors whereto the genus befits withoxit the medium of some subaltern genus. (Thus, if 'animate' were divided through the differences 'rational' and 'irrational', the difference 'rational' constitutes an inferior, to wit, 'man', whereto 'animate' befits on}} by the medium of a subaltern genus 'animal').
- b3b. The reason of this condition is clear from, an example :-
- b3bl. Let this example be taken:



b3b2. Then is omitted something of the intelligible content of 'man', to wit, 'sentient' and 'animal', so that the nature of man, or, in other words, the intelligible content of man, is not manifested or unfolded. For it must be recalled that definition:

- b3b2a. is a locution unfolding or manifesting a nature, i.e. setting forth the intelligible content of a natiore, or, in other words, signifying WHAT man is (n.162),
- b3b2b. and not merely indicating WHICH thing is man: (v\h,ich indeed would be sufficiently done if it were said that man is 'rational body\*', and which also, indeed, is sufficiently done already by vulgar definition).

- c. ADI^MIT HO GAPS IN SUBDIVISIONS:
  - c1. (As a gap would be admitted if animal is divided into vertebrate. anthropod and annelid; mollusc being omitted).
  - c2. For it may happen that that whereof the definition is sought lies in the gap: in which case either its definition will not be achieved, or it will be defined badly).
- d. GIVE THE ULTBIATE DIVISION FOR THE ULTIL.iATE DIFFERENCE;
  - d1. The ultimate division being that beyond which, if a further division is made, the diverse members constituted by this further division do not differ specifically from tliat whereof the definition is sought. Thus, if man is to be defined, the ultimate difference is 'rational' ; for if



beyond division according to 'rational' and 'irrational' some further division is made, such as the division of 'rational animal' through 'white' and 'non-white'. then the diverse members constituted through these differences (to wit, 'white-man' and 'non-white-man'), are each specifically the same as 'man'.

d2. This ultimate difference, as thus explained, is accordingly to be given as the specific difference.

e. PUT THAT DIFFERENCE AS ULTIMATE ACCORDING TO ORDER:

e1. For:

e1a. not only is it necessary that the due concepts be included in the definition,

e1b. but also they must be set in the due order.

e2. Thus, if 'animal' is divided through the differences 'vertebrate' and 'invertebrate':

e2a. not rightly would 'animal vertebrate' be said, as if there were other vertebrates besides animal vertebrates,

e2b. but rather 'vertebrate animal' must be said.

f. BE COMPILED FROM THE ASCENDING WAY, - which will be dealt with in the next paragraph (n.151).

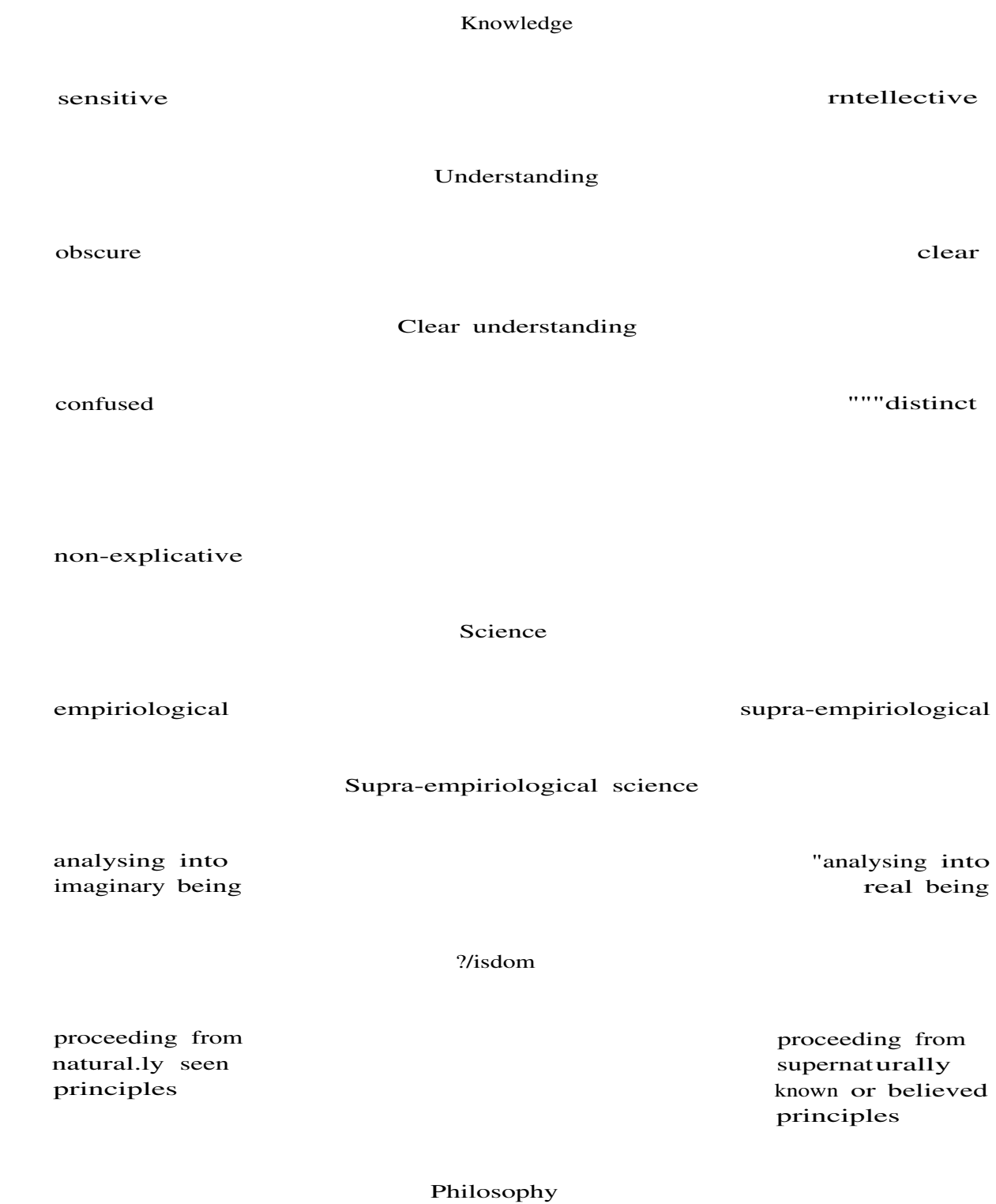
B. As an example of a definition achieved by a descending pursuit, take the definition of man as it is gathered from the tree of Porphyry (n.128), to wit: 'rational animal'.

a. Where the ultimate difference is 'rational': which difference alone of all the differences is to be indicated, since all the other differences are included in 'animal'.

b. And where the lowest genus is 'animal': which genus alone of all the genera is to be indicated, for all the other genera are included in it.

C. As another example of a descending pursuit, take the pursuit of the definition of philosophy enacted in the introduction to philosophy:

a. Which pursuit may be thus summarized schematically:-



b. Wherefore philosophy is defined: Natural wisdom, or science through supreme causes proceedi-ng under the natural light of the principles of reason.

D. As a further example of a descendin.g pursuit, talce the pursuit of the defi.nition of analogue conducted here-above (nn. 149-151) ; v;hich pursuit may be thus scharatically summarized:-

### Predicate

signifying the  
same character

signifying  
diverse character

signifying diverse character

signifying  
character  
partly same

signifying  
character utterly  
diverse

Predicate  
signifying character  
partly diverse and partly same

signifying  
character  
simply same and  
secondarily  
diverse

signifying  
character  
simply diverse  
and secondarily  
same

### Analogue

181. ASCENDING PURSUIT: This is explained by Aristotle (Anal. Post, I, 1, 1013, n.97b;) and by St Thomas in his commentary thereupon (lect.16). (Cf. De Tonquedec, Critique de la Connaissance, p.350).

A. This ascending pursuit OUGHT to:

a. First, ACCURATELY OBSERVE THE THING TO BE DEFINED:

a1. both IN ITSELF.

a2. and IN ITS SIMILARS.

Secondly. IN LIKE FASHION OBSERVE DISSIMILARS.

c. Thirdly, COMPARING THE SIMILARS WITH THEIR DISSIMILARS in order to see whether they agree in some one character.

c1. If they are found to agree in some one character, that character will be the genus or "something common" (cf. n.172, B).

c2. That genus is accordingly clearly stated.

d. Fourthly. COMPARE THEIR SIMILARS WITH THE DISSIMILARS in order to see in what they differ.

d1. Those things through which they differ will be their differences or "particular distinctives" (cf. n.172, B).

d2. The difference pertaining to the similars will be the difference of the THING TO BE DEFINED or its "particular distinctive".

e. Fifthly. BE GOVERNED FROM THE DESCENDING WAY.

B. This process will be made clear from an example: let us suppose that we are pursuing a definition of philosophy:

a. First. let us select ARISTOTLE (or Aristotle and Plato):

a1. For all agree that Aristotle is a philosopher; (here we are using the confused knowledge of what philosophy or philosopher is; or, in other words, a nominal or common-sense definition).

a2. Therefore that whereby Aristotle is a philosopher, of that which is proper to him AS A PHILOSOPHER will be philosophy.

"b. Secondly, let us consider those who are LIKE ARISTOTLE (or like Aristotle and Plato); like them are:

- hi. Parmenides.
- h2. Socrates.
- b3. Avicenna.
- b4. Averroes,
- b5. Descartes,
- b6. Leibnitz,
- b7. Kant.
- b8. Hegel
- b9. Bergson.

c. Thirdly. let us consider those who are UNLIKE ARISTOTLE (or unlike Aristotle and Plato): unlike them are:

- c1. Copernicus,
- c2. Galileo,
- c3. Kepler,
- c4. Pasteur,
- c5. Euclid,
- c6. Archimedes,
- c7. Gauss)
- c8. G.G. Jacobi.
- c9. St Gregory Nazianzen,
- c10. St Austin,
- c11. St Prosper,
- c12. St Anselm.

d. Fourthly, let us compare those who are ALIKE with those who are UNLIKE. in order to see whether they agree in some one character.

d1. We find that they all agree in this, that they have SCIENCE.

d2. Therefore we lay it down that science is the GENUS under which philosophy is contained.

Fifthly. let us compare those who are ALIKE with those who are UNLIKE. in order to see THROUGH WHAT THEY DIFFER.

e1. We find that Aristotle and Plato and those who are like them, differ

e1a. From Copernicus, Galileo, Kepler and Pasteur in this, that:

e1a1. whereas these have experimental science,

e1a2. Aristotle, Plato and those who are like them, have a supra-experimental science.

e1b. And from Euclid, Archimedes, Gauss and Jacobi in this, that:

e1b1. whereas these have science which analyses its concepts into imaginary being,

e1b2. Aristotle. Plato and those who are like them have science which analyses its concepts into real being.

e1c. And from St Gregory, St Austin, St Prosper and St Anselm, in this:

e1c1. whereas these have science which explains from principles divinely revealed and believed,

e1c2. Aristotle, Plato and those who are like them, have science which explains from principles naturally known and seen.

e2. Therefore we lay it down that the difference or "particular distinctive" of philosophy, whereby it is distinguished from other sciences consists in this character, to wit: Supra-experimental, analysing its concepts into real being, and explaining from naturally seen principles.

f. Accordingly we DEFINE philosophy: Supra-experimental science, analysing its concepts into real being, and explaining from naturally seen principles. 'Which definition is indeed not other than that reached by the descending way (n.180, C).

182. VALUE OF THESE PURSUITS: From what has been said regarding these two pursuits:

A. It is clear:

a. that definition is in no way posited 'a priori', but is based upon, or elaborated from, things.

b. And this remains true, even if the definition is reached by the  
| since the supreme genus, known previously, is known by  
means of abstraction from sensibles.

- B, But the value of these pursuits cannot be understood:
- a. either by Empirists or Positivists, who:
    - a1. denying that we can abstract NATURES from individuals,
    - a2. think^that those who define construct definitions 'a priori\*.
  - b. Or by Idealists, who:
    - b1. in the stead of this abstractive process,
    - b2. substitute a PURELY constructive ability of our intellect.

CHAPTER PIPTEIII.

THE PRINCIPAL INSTRUMENT OF DEFINITION, WHICH IS DIVISION.

185. ORDER OF PROCEDURE: Since division is the distribution of a whole into its parts:

- A. This treatment of division will consider:
- a- First. whole and part.
  - "b- Secondly, division: and indeed:
    - In the first place, the nature of division.
    - In the second place, the kinds of division.
    - In the third place, the laws of division.

B. Hence the following order:-

On the whole and part		Article one.
On division	Its nature	Article two.
[On division itself	:Its kinds.	Article three.
	Its laws..	Article four.

ARTICLE ONE.

WHOLE AND PART.

184. NOTION OF WHOLE: Something is called whole in two ways, to wit:

A. "whole or wholeness is said in one way ABSOLUTELY, and thus whole is the same as perfect.

S. "In another way whole is said THROUGH COMPARISON TO PARTS." (St ^onaventure, In I Sent. d.19, p.2, a.1, q^1, resol, ; cf. St Thomas, In Dion. De Div. Nomin. c.2, 1oct.1).

- ^ a. It is 'with whole taken in this latter way that we are concerned here, 'where it is question of a 'whole as it is that which is divided;
- b. and thus taken TOOLE is: ONE CONSIDERED THROUGH REFERENCE TO ITS PARTS,

185, NOTION OF PART: Accordingly:

A. Since "the parts of a thing are those into which the whole is divided materially:  
 a. "for the parts have themselves to the whole as matter to form;  
 h. "wherefore (Physic. II.):  
 hi. "the parts are placed in the genus of material cause;  
 b2. "but the whole in the genus of formal cause." (III. q.90, a.1; of. In II Physic, lect.5).

B. Therefore a PART is: One of those into which a whole is divided materially.

186. Knowledge of Whole: Let us take:

A. These examples:

- a. 'animal'.
- h. 'man'.
- c. 'existing man'.
- d. 'human soul'.
- e. 'being'.
- f. 'knowledge'.
- g. 'heap'.
- h. 'white man'.
- i. 'litter'.
- j. 'family'.
- k. 'state'.
- l. 'white'.

3. Of these examples;

- a. Some (v.g. 'animal') are one 'per se', i.e. that whose being is one.
- b. But a whole whereof the being is one is called a whole 'per se' (whole of itself, whole of its own nature).

C. But:

- a. other (v.g. 'white man') are one 'per accidens', i.e. that whose being is many: for:
  - a1. other is the of man,
  - a2, and other is the of whiteness.
- b. But a whole whereof the being is many is called a whole 'per accidens' or accidental whole.

a whole of itself (per se), may be considered:

- a. either REALLY. i.e. as a real nature: and thus considered it is called a REAL whole.
- b. or LOGICALLY. i.e. as a logical universal: and thus considered it is called a LOGICAL OR UNIVERSAL whole.

E. But a whole of itself (v.g. 'man') taken as a REAL whole:

- a. may be taken through reference to parts expressing its essence: and thus taken it is called an ESSENTIAL whole; but the parts of its essence relatively to which it is taken, may be:
  - a1. either the PHYSICAL parts of the essence, i.e. relatively to the parts which are really distinct from each other (as the parts of man really distinct from each other are soul and body): and thus taken it is called a PHYSICAL whole.
  - a2. or the METAPHYSICAL parts of the essence, i.e. relatively to the metaphysical degrees which are not really distinct from each other (as 'animal' and 'rational' are parts of man): and thus taken it is called a METAPHYSICAL whole.
- b. Or may be taken through reference to parts not expressing the essence: and thus taken it is called a NON-ESSENTIAL whole; but the parts relatively to which it is taken may be:
  - b1. either PARTITIVE parts (v.g. as 'existing man' consists of 'man-' and 'existence (be)': and thus taken it is called a PARTITIVE whole.
  - b2. or INTEGRAL or quantitative parts (v.g. as 'man' consists of 'head' 'neck', 'trunk', 'arms' and 'legs'): and thus taken it is called an INTEGRAL whole.

b3. or POTESTATIVE parts or degrees of power (v.g. as 'human soul' consists of 'vegetative soul', and 'sensitive soul' and 'intellective soul'): and thus taken it is called a POTESTATIVE MOLE.

F. But a WHOLE OF ITSELF (v.g. 'animal', 'man', 'being', 'knowledge') TAKEN AS A LOGICAL OR UNIVERSAL WHOLE, consists of parts which are its inferiors: but these inferiors may be:

either inferiors whereof the whole is predicated UNIVOCALLY (as 'animal' and 'man' are predicated univocally of their inferiors): and then the whole is called a UNIVOCAL WHOLE: which is:

a1. either GENUS such as 'animal': and then it is called a GENERIC WHOLE; - whereof the parts are SPECIES.

a2. or SPECIES such as 'man': and then it is called a SPECIFIC WHOLE, - whereof the parts are INDIVIDUALS.

b. or inferiors whereof the whole is predicated ANALOGICALLY (as 'being' or 'knowledge' are predicated analogically of their inferiors): and then the whole is called an ANALOGOUS WHOLE, - whereof the parts are MODES.

G. But:

a. Just as a WHOLE OF ITSELF (per se) may be taken either really or logically (cf. D),

b. so also may an ACCIDENTAL WHOLE be taken:

b1. either REALLY, i.e. as a REAL WHOLE.

b2. or LOGICALLY, i.e. as a LOGICAL OR UNIVERSAL MOLE.

H. But an ACCIDENTAL WHOLE (v.g. 'heap', 'white man', 'litter', 'family', 'state') TAKEN REALLY may be:

a. either an AGGREGATE WHOLE, i.e. a whole whereof the unity is by juxtaposition: such as a 'heap'.

b. or a CAUSAL WHOLE, i.e. a whole whereof the unity is on the score of cause: which cause may be:

b1. either intrinsic or formal: and then it has an INHERENTIAL WHOLE, such as 'white man', where the unity of the whole is through the inherence of whiteness in man as an (accidental) formal cause.

b2. or extrinsic: and then:

b2a. either efficient: as a 'litter' is a whole whose unity is on the score of efficient cause, inasmuch as the parts proceed from one agent.

b2b. or final: as 'family' or 'state', whose unity is on the score of final cause, inasmuch as the parts conspire to one end.

I. But an ACCIDENTAL WHOLE TAKEN LOGICALLY may be:

a. either an accidental whole universal to some substance diverse according to accident: as 'coloured man' is a universal whole whereof the inferiors or parts are 'white man', 'black man', 'yellow man', etc.

b. or an accidental whole universal to some accident diverse according to subject: as 'white' is a universal whole whereof the inferiors or parts are 'milk', 'snow' etc.

c. or an accidental whole universal to some accident diverse according to another accident: as 'white' is a universal whole whereof the inferiors or parts are 'sweet white', 'bitter white' etc.

J. Accordingly the kinds of whole may be thus shown schematically:-

either a PHYSICAL WHOLE.

either an  
ESSENCE  
WHOLE;  
either which is  
as a  
ESSENCE  
WHOLE:  
which  
is

or a METAPHYSICAL WHOLE.

either an ESENTIATIVE WHOLE.

either an INTEGRAL WHOLE.

either through:  
ITSELF  
which  
may be  
consi-  
dered

or a NON-  
ESSENTIAL  
WHOLE;  
which is

or a QUAL-  
ENTITATIVE  
WHOLE; and  
this is

or a POTESTATIVE WHOLE.

either a GENERIC WHOLE (genus).

or as a  
LOGICAL or  
UNIVERSAL  
WHOLE;  
which is

either a  
UNIVOCAL  
WHOLE;  
which is

or a SPECIFIC WHOLE (species).

Something  
may be  
a WHOLE;

or an ANALOGOUS WHOLE (analogue).

either an AGGREGATE WHOLE.

either  
as a  
REAL  
WHOLE:  
which  
is

either an ESSENTIAL WHOLE.  
or a  
CAUSAL  
WHOLE; or a NON-  
which  
is

either a WHOLE by  
reason of AGENT.

or  
ACCIDENTALLY;  
which may be  
considered

is  
is  
is

either a WHOLE by reason  
of END.

either of SUBSTANCES diverse according  
to accident.

or as a  
LOGICAL or  
UNIVERSAL  
WHOLE;  
which is

either diverse according to  
substance or subject.

or of  
ACCIDENTS:  
and then

or diverse according to  
another accident.

ARTICLE TWO.

NATURE OF DIVISION.

187. NOTION OF DIVISION; In order to manifest what is confused in a thing which is to be defined, that thing must be distributed through its members, or, if it be the question of some term, through its various significations. (Cf. John of St Thomas, *Cursus Phil.* I, p.21).

A. For division, like definition, manifests the parts of something;  
a. but otherwise than does definition:



b. for whereas:

hi. definition manifests the parts in conjoining; them,

h2. division manifests them in resolving; them.

B. And division, like definition, tends towards a distinct concept:

a. but otherwise than does definition;

b. for division, by proposing the parts, as it were, gathers the matter from which definition is made. (cf. n.180).

C. Accordingly:

a. While DIVISION TAKES ONLY IS: DISTRIBUTION OF A WHOLE INTO ITS PARTS.

b. LOGICAL DIVISION (i.e. division taken as a "mode of knowing" or as an instrument of definition) IS: DISCOURSE DISTRIBUTING SOME THING THROUGH ITS MEMBERS OR A TERM THROUGH ITS VARIOUS SIGNIFICATIONS.

188. FOUNDATION OF DIVISION: In every division are to be distinguished:

A. Besides:

a. The WHOLE, which is what is divided,

b. and the PARTS, which are the members into which the whole is divided:

3. Also the FOUNDATION of the division:

a. which is that by reason whereof (or on the score whereof) division is made.

b. Thus:

b1. if man is divided into, white man, black man, yellow man etc.,

b2. the foundation of that division is colour.

### ARTICLE THREE.

#### KINDS OF DIVISION.

189. NOMINAL AND REAL DIVISION: It is clear from what has been said (n.187), that there are two genera of division, according as the whole to be divided is either a thing or a name.

A. Division WHICH MANIFESTS THE SIGNIFICATIONS OF A VOCABLE is called NOMINAL division.

B. But division WHICH DISTRIBUTES A THING ITSELF INTO ITS PARTS is called REAL division. Here are some examples of real division:

a. 'division of animal into rational animal and irrational animal'.

b. 'division of man into white man and black man'.

c. 'division of man into soul and body'.

190. KINDS OF REAL DIVISION: Let us take the examples just given (n.189):

A. Of these examples:

a. The first and third distribute a whole ('animal' and 'man') into parts which "are in the whole OF ITSELF (per se or BY REASON OF ITS NATURE;

a1. for by reason of its own nature, animal contains beneath itself rational animal and irrational animal.

a2. and likewise by reason of his own nature, man contains within himself soul and body.

b. Such a division, WHICH DISTRIBUTES A WHOLE INTO PARTS WHICH BY REASON OF ITS OWN NATURE ARE IN IT. is called DIVISION 'PER SE' (OF division through own nature).

B. But the second example has itself otherwise:

- a. For \*white' and 'black\* ;
  - a1. are not parts of the nature of man,
  - a2. but accidents of man.
- b. Such a division, WHICH DISTRIBUTES A THING INTO PARTS WHICH ARE IN IT BY WAY OF ACCIDENT OR BY REASON OF OTHER, is called DIVISION OF ACCIDENTS\* or ACCIDENTAL DIVISION.

C. Therefore:

- a. Care must be taken not to confuse;
  - a1. division 'per se\*.
  - a2. with division of a whole 'per se\*;
- b. For:
  - b1. also an accidental whole may be divided 'per se': as when:
    - b1a. 'white man' is divided into 'man' and 'whiteness';
    - b1b. or 'heap' is divided into 'this stone' and 'that stone'.
  - b2. and a whole 'per se\* may be divided 'per accidents\* : as when:
    - b2a. 'man\* (rational animal) is divided into 'man\* (male) and woman;
    - b2b. or 'man' is divided into 'white man', 'black man', 'yellow man\* etc.

D. Let us again consider the first example: 'division of animal into rational animal and irrational animal' ; and also another example: 'division of being into substance and accident\*:

- a. In both of these examples:
  - a1. the whole is a LOGICAL UNIVERSAL;
  - a2. and the parts are its INFERIORS. which are called SUBJECTIVE parts.
- b. But:
  - b1. In the former example:
    - b1a. the whole is a UNIVOCAL WHOLE, containing its parts not actually, but potentially: wherefore it is called a UNIVOCAL or POTENTIAL WHOLE;
    - b1b. and the parts are called UNIVOCAL or POTENTIAL parts:
      - b1b1. and if the whole is a genus, then the parts are species;
      - b1b2. but if the whole is a species, then the parts are individuals.
  - b2. Whereas in the latter example:
    - b2a. the whole (being) is an ANALOGOUS WHOLE, containing its parts actually confusedly: wherefore it is called an ANALOGOUS WHOLE;
    - b2b. and the parts are called MODES.

E. But let us take the example: 'division of man into soul and body\*'; and also this other example: 'division of man into animal and rational\*:

- a. In both these examples:
  - a1. the whole with reference to the parts into which it is divided:
    - a1a. is not a logical universal,
    - a1b. but is a real nature; and therefore thus taken is taken as a REAL whole;
  - a2. and the parts:
    - a2a. are not inferiors,
    - a2b. but are parts of a real nature.
- b. However:
  - b1. In both these examples the whole is divided into parts which express its essence.
  - b2. wherefore such division is called ESSENTIAL DIVISION.
  - b3. Nevertheless these two examples do not have themselves in the same way:
    - b3a. For in the former example ('division of man into soul and body') the parts are REALLY DISTINCT ESSENTIAL PARTS: wherefore:
      - b3a1. such parts are called PHYSICAL ESSENTIAL PARTS;
      - b3a2. and such division is called PHYSICAL ESSENTIAL DIVISION.
    - b3b. But in the latter example ('division of man into animal and rational\*'), the parts are not really distinct essential parts, but are METAPHYSICAL DEGREES: wherefore:
      - b3b1. such parts are called METAPHYSICAL ESSENTIAL PARTS;
      - b3b2. and such division is called METAPHYSICAL ESSENTIAL DIVISION.

F. But:

- a. Not every division of a real whole is a division into parts which express its essence.

"b. Which is clear from these examples; 'division of actual man into essence and be\*: 'division of man into head, neck, trunk, arms and legs\*; 'division of human soul into vegetative aoulj sensitive soulj and intellective soul' :

hi. For in these examples, the parts do not express the essence of man, nor of human soul.

h2. But the first example is a division into ENTITATIVE parts, i.e. into those members which constitute the BEING or ENTITY of actual man: wherefore such division is called ENTITATIVE DIVISION.

h3. And the second example is a division into INTEGRAL or QUANTITATIVE parts: wherefore it is called INTEGRAL DIVISION.

h4. And the third example is a division into degrees of power, which are called POTESTATIVE parts; wherefore such division is called POTESTATIVE DIVISION.

G. But ACCIDENTAL DIVISION;

a. Is always division of a logical or universal into its inferiors

h, for division of an accidental real whole is either essential or integral division; and therefore is the same kind of division as that of a real whole which is through self a whole.

H. And indeed ACCIDENTAL DIVISION is:

a. either of a substance into inferiors according to diverse accidental differences; as when man is divided into white man, black man, yellow man etc

b. or of an accident into inferiors: and then:

bl. either according to diverse substances or subjects: as when 'milk' is divided into 'milk' and 'snow' etc;

b2. or according to diverse accidental differences: as when 'white' is divided into 'sweet white' and 'bitter white'.

I. Accordingly the diverse divisions may be thus schematically exhibited:-

either of a NAME; and then it is NOMINAL DIVISION.

either PHYSICAL.

either  
ESSENTIAL;  
jwhich is

either of or METAPHYSICAL.

a real  
whole:  
and then [either ENTITATIVE.

it is or NON-  
ESSENTIAL; either INTEG-RAL.

which is or NON-  
pCTITATIVE;  
which is

or POTESTATIVE.

DIVI-  
SION  
is

either  
»PER

either GENUS, which is  
divided into species.

which  
is

either UNIVO-  
CAL; and then  
LOGICAL or the diviaioh  
UNIVERSAL is UNIVOCAL.  
WHOLE; and and into  
then the UNIVOCAL  
division PiiprS; but a  
is into univocal  
SUBJECTIVE whole is

or of a  
THING; and  
then it is  
]RE»VTI  
EmaiQN;  
which is

PARTS; hut or SPECIES, which is  
logical or divided into individuals.  
universal

whole is or iUiILOGOUS; and then the division is  
ANALOGOUS, and into i»N/JiOGOUS PARTS,  
which are inodes.

either a substance divided into inferiors  
through diverse accidental differences.

or ACCIDENTAL;  
and then is  
divided a  
logical or  
universal or an accident  
whole, which is divided into  
inferiors;  
and then indeed

either according to  
diverse subjects or  
substances.

or according to diverse  
accidental differences.

## ARTICLE FOUR.

## LAWS OF DIVISION.

191. **FIRST LAW:** "Let all the dividing members together exhaust, or be adequate to, the divided whole: for in the whole there is not else than all the parts together." (John of St Thomas: Cursus Phil. I, p.21).

192. **SECOND LAW:** "Let the members singly taken be inferior to, that is, less than, the whole.

A. For a whole is greater than the part." (John of St Thomas, *ibid.*).

B. This law follows from the first law.

193. **THIRD LAW;** Let the dividing members be opposite.

A. This follows from the first law.

B. Hence:

- a. let not one member be another,
- b. nor include another in itself.

C. Therefore division is always to be made *\*per sic et non\**, that is, through contradictories.

194. **FOURTH LAW:** In division:

A. Let those members be first assigned into which the dividend is immediately divided;

B. and if afterwards other divisors occur, let the members of the first division be subdivided singly.

C. This follows from the third law.

## BOOK TWO.

## SECOND PART OF LOGIC: ON PREDICATION.

195. CONNEXION WITH PRECEDING PART: Having dealt with those things which pertain to predicability, we come now to the question of predication itself, or of the manners in which predicables are actually attributed to subjects.

196. GENERAL VIEW OF THIS PART: However, since predication is made in Judgment,

A. Before approaching predication itself, certain thing must be premised regarding:

- a. Judgment itself,
- b. and its sign, or proposition.

B. This part of logic will accordingly be dealt with in two sections:

a. SECTION ONE will treat the pre-ambles to the study of predication: which are two, to wit:

- a1. Judgment itself, which is the CAUSE of predication.
- a2. The WORK of Judgment and together its SIGN, which is the proposition or enunciation.

b. SECTION TWO will treat of predication itself.

C. Which may be thus exhibited schematically:-

On judgment, which is the CAUSE of predication.

PRE-MBLES to the study of predication: (SECTION ONE)	On the WORK of judgment and together the SIGNIFICATION of that work, which is the PROPOSITION;	Its definition.	
		Its nature;	Its division.
		Its properties.	
		On predication;	
On PREDICATION ITSELF; (section two)	in signified act	Its nature.	
		identical predication.	
		PER SE; on the four modes.	
		Its species	direct
	in exercised act	Formal predication	PER ACCIDENS.
		indirect.	
		of the concrete.	
		Predication of the CONCRETE;	
		of the abstract.	
		of the abstract.	
		Predication of the ABSTRACT;	
		—	of the concrete.

SECTION ONE.

PRE-MBLES TO THE STUDY OF PREDICATION.

197. ORDER OF PROCEDURE; As indicated above, the pre-ambles to the study of predication;
- A. Deal;
- a\* First. with judgment.. which is the cause of predication,
- b. Secondly, with the work of judgment, which is enunciation, and the sign thereof, which is proposition.
- B. Hence the following order:-

Pre-ambles to the study of predication:	On judgment.....	Chapter sixteen.
	On enunciation or proposition	Chapter seventeen.

## CHAPTER SDCTESM.

JUDGMENT, **raiCH** IS THE CAUSE OP PREDICATION.198. **ORDER OP PROCEDURE:** The treatment of judgment:

- A. **Will** expose:
  - a. **First**, its nature.
  - b. **Secondly**, its properties.

D. Hence the following order:-

**Its nature...Article** one.On judgment, which is the  
cause of predication:**Its properties....Article** two.

## ARTICLE ONE.

## NATURE OP JUDQCBNT.

199. **COMPARISON OP JUDGMENT WITH SIMPLE APPREHENSION:** Something has been said already above regarding judgment and its diversity from simple apprehension (nn.15-17).

- A. Simple apprehension:
  - a. even that whereby is obtained:
    - a1. a complex concept such as 'musician', (cf. n.49, A.b),
    - a2. or a composite understanding such as 'rational animal' (cf.n.161),
  - b. is never a perfect knowledge:
    - b1. (Note that we say 'perfect knowledge', not 'perfect concept'):
    - b2. For formally it is neither true nor false.

- B. Truth and falsity of knowledge appear, when the intellect begins:
  - a- to affirm THAT miCR IS or IS NOT. TO BE:
  - b. or to deny THAT WHICH fS NOT or IS^ TO BE.

C. This:

- a- affirmation is made by means of the verb '**IS**': as in this example: 'Man IS\_ mortal'.
- i). negation is made by means of the verb '**IS NOT**' : as in this example: 'This boy IS NOT lazy'.

200. **DEFINITION OP JUDGMENT:** Accordingly:

A. "THE ACT OP INTELLECT TjHEREBY IT COMPOSES OR DIVIDES BY AFFIRMING OR DENYING" is JUDGMENT (Pe Yerit. q.14. a.1).

B. For judgment is an act of intellect, not of will, as was contended by Descartes (Discours de la Methode et Meditation 4), by Malebranohe (Recherche de la Verite, I, ch.2; TV, ch.1), and by others.

- a. For the object of judgment is to assert a relation between concepts and thing: which asserting results from comparison.
  - a1. Therefore the same is the object of judgment as of comparison.
  - a2. But comparison is an act of intellect, not of will.
  - b. But Descartes and all those who along with him admit that concepts that which we know:
    - b1, make comparison of concepts with thing impossible;



- b2. and therefore they are obliged to attribute judgment:
  - b2a. not to the intellect,
  - b2b. but to the will.
- c. This question of the intellectualist or voluntarist nature of judgment is dealt with more fully in psychology.

C. Many modern writers deny that in every judgment there is composition of two concepts (they give such examples as these: 'Good\*', 'Veil', 'Well-done', 'Bravo'). Moreover they deny that ideas or concepts precede judgment.

- a. For:
  - a1. these authors:
    - ala. either conceive judgment, as did Kant, as a subsumption of the intuitions of sensibility to the 'a priori' forms of the understanding,
    - alb. or, along with Idealists. conceive judgment as a creation of mind.
  - a2. But these conceptions:
    - a2a. which indeed logically follow from the subjective tenets of Kantian philosophy or of the Idealists,
    - a2b. are not coherent with the realism of knowledge..
- b. These modern writers:
  - b1. are more or less imbued with the principles of the Idealists,
  - b2. and especially they forget that intellect cannot affirm or deny some relation without previously apprehending the things between which is the relation to be affirmed, - as is shown at length in defensive metaphysics.

c. Therefore as to what concerns the composition and division, it is to be noted that "since the conceptions of the intellect are the similitudes of things, those things which pertain to the intellect can be considered and named in two ways: in one way according to themselves, in another way according to the characters of the things, whereof they are similitudes. Just as the image of Hercules according to itself indeed is said to be, and is, copper; but inasmuch as it is a similitude of Hercules, it is named a man.

c1. "Thus also, if we consider those things which pertain to the intellect according to themselves, there is always composition where there is truth and falsity; which is never found in the intellect, save through this that the intellect compares one simple concept to another.

c2. "But if it be referred to the thing, sometimes it is called composition, sometimes it is called division.

c2a. "Composition indeed when the intellect compares one concept to another, as apprehending the conjunction or identity of the THINGS whereof they are the conceptions;

c2b. "but division, when it so compares one concept to another, as to apprehend that the THINGS are diverse." (in I Periherm. lect.3, n.4).

c3. Which is thus well expressed by Maritain:

c3a. "Considering concepts in relation to the thing itself 'according to the characters of the things whereof they are the similitudes':

c3al. "there is:

o3ala. "composition 'when the intelligence compares one concept with another in such a manner as to grasp the conjunction or identity between the things which these concepts represent;

c3alb. "'and division when the intelligence compares one concept with another in such a manner as to apprehend that these things are different.'

c3a2. "In this sense an affirmative enunciation is called 'composition' inasmuch as it signifies conjunction on the part of the thing, a negative enunciation, 'division\*', inasmuch as it signifies the separation of things, and the second operation of the mind is called 'composition and division\*'.  
 c3b. "But considering concepts according to themselves, as they are themselves in the mind, the intelligence always formulates its (affirmative or negative) enunciations by comparing and combining concepts. From this aspect, the second operation of the mind always involves composition." (Maritain: Introduction to Logic, p.83).

D. By the words "BY ILLIRMING CE DENYING" is indicated the FORM of judgment, which is ASSENT (affirmation) or pjsSMT (negation).

a. For it is to be considered that SEVIEAL ACTS concur to the forming of a judgment, - as is shown in psychology.

al. To illustrate this, let us take the judgment: 'The clock is standing on the table'.

ala. First, I apprehend 'the clock' and '(thing) standing on the table'. The apprehensions of these are SHvIPLE AFFKEHENSIONS (the first operation of the mind (nn.16-18; 25-31).

alb. Secondly I compose these two, forming the mental enunciation, which is a MENTAL CONSTRUCT, to wit: 'the clock is (a thing) standing on the table'. In doing this, I IDENTIFY S (the clock) and P (thing standing on the table).

ale. Thirdly, I compare this construct with the thing, enquiring whether IN THE THING there is identity between 'the clock\*' and '(a thing) standing on the table' as there is in the mental construct; that is, I enquire whether the two concepts, to wit, 'the clock' and 'a thing standing on the table' are each conformed with THE SAME THING.

aid. Fourthly, I apprehend or perceive that each of these two concepts is conformed with THE SAME THING, thus apprehending that THE THING which I conceive as 'the clock' is THE SAME THING with THE THING which I conceive as 'a thing standing on the table'; in apprehending this, I apprehend also in exercised act the conformity of the MENTAL CONSTRUCT with THE THING, perceiving that there is identity in the thing between 'the clock' and 'a thing standing on the table' JUST AS there is identity in the mental oonstrucyt.

Fifthly, I affirm (assert or assent to) this IDENTITY IN THE THING, thereby asserting also in exercised act the CONFORMITY of the mental construct with the thing. This last act is the VERY ACT OF JUDCMENT itself.

a2. It will be well here - borrowing from psychology - to explain these several acts further.

a2a. FIRST ACT: The first act or phase is the SIMPLE APPREEIEI^SIONS whereby the intellect understands 'the clock' and '(thingX"standing on the table), i.e. those realities which will be the S and P of the judgmentii

a2al. However, so far these are apprehended:

a2ala. absolutely in themselves,

a2alb. not as related to each other by way of S and P.

a2a2. Regarding this act of simple apprehensions enough has been said above (nn.16-18; 25-31).

a2b. SECOND ACT: The second act or phase is the COMPOSITION OR DIVISION of S and P, i.e. the act of setting up 'the clock' and 'thing standing on the table' in an enianciation aS SUBJECT AND PREDICATE.

a2bl. This act accordingly is terminated at a WORK or CONSTRUCT, to wit, a (mental) ENUNCIATION, which is not yet judged (i.e. not yet affirmed nor denied")")" - for the judgment, which is affirmation or denial, has not yet been exercised, - but TO BE JI]]y-En.

a2b2. This (mental) enunciation preceding judgment:

a2b2a. expresses merely a possible judgment, being' a merely AFFIRMABLE OR DENI/IBLB PROPOSITION:

a2b2b. and therefore may be called a PROPOSITION TO BE JUDGED, or an ENUNCIATIVE PROPOSITION, or PROPOSITION SIGinIFIED;

a2b2c. and it has itself as the matter of the proposition formally taken or Judicative proposition or proposition exercised which arises in the very act of judging.

a2b3. This enunciative proposition:

a2b5a. is:

a2b3al. known in being constructed, for it is constructed by an act of knowledge, namely, by an act of comparative apprehension;

a2b3a2. said constructed in being; known, for in it the S and P are broiaght together, i.e. composed,\*

a2b3b. and:

a2b5bl. consists of two concepts copulated as S and P;

a2b3b2. wherefore these are copulated by the verb 'is' (or 'is not'):  
which indeed:

a2b3b2a. as always, signifies existence (actual or possible),

a2b3b2b. but:

a2b3b2bl. not yet exercised existence,

a2b3b2b2. but only signified existence;

a2b3b2c. wherefore in this enunciative proposition the copula ('is' or 'is not'):

a2b3b2cl. exercises only a copulative office,

a2b3b2c2. and not yet a judicative office,

a2b4. The EXISTENCE of such proposition signified or enunciative proposition previous to judgment, is evident:

a2b4a. First indeed, 'a priori':

a2b4al. For judgment is an assent (or dissent) of the intellect about something which is capable of being so judged;

a2b4a2. But only a complex truth signified by an enunciation is capable of being so judged,

a2b4a3. Therefore the act of judgment is distinct from, and presupposes the construction of the enunciation.

a2b4b. Secondly, 'a posteriori':

a2b4bl. "When we make a doubtful enunciation, we see with particular clarity that the act of constructing an enunciation, in which we already combine and divide, is not the same as the act of judging. In formulating such a proposition \_we have materially combined two concepts; we have not yet judged (for on the contrary, we are withholding assent and taking care not to say 'this is so' or 'this is not so')." (Maritain: Introd. to Logic, p.86)

a2b4b2. Moreover. before we answer a question even mentally (i.e. before we judge), we have the question in mind: that is, we have in mind the enunciation to which we will assent or dissent; or, in other words, we have in mind the enunciation which we are about to judge.

a2b4b3. Generally too, before we affirm we must have enacted some process of discovery or, 'invention': "It is by having before our mind a proposition that is already constructed, but as something 'to be judged' as 'invented', not as demonstrated (e.g, 'plants breathe?') that we can in a reasoning..compare the S and P with that which is, and judge that it is true: 'yes, plants breathe'." (Maritain;^, loc. cit. p.87).

a2b5. If many philosophers have failed to observe this distinction between this enunciative proposition which precedes the act of judging, and the judicative proposition which is constituted in the very act of judging, it is because the former is, so to speak, masked by the latter, since the judicative proposition is utterly similar to the enunciative proposition in regard to oral expression: for both of them are thus orally expressed: 'The clock is standing on the table'.

a2c. THIRD ACT; The third act or phase is the COMPARISON of S and P AS THEY ARE THING or AS THEY ARE IN THE REAL.

a2cl. This act consists in enquiring:

a2cla. whether IN THING there is identity between 'the clock' and 'a thing standing on the table';

a2clb. or, in other words, w/hether there is exercised IN THE REAL that identity which is signified in the mental construct or enunciative proposition;

a2clc. or, again, whether the two concepts, to wit, 'the clock' and 'a thing standing on the table', which have been composed in the enunciative proposition, are each conformed with the same thing.

a2c2. This comparison or enquiry may be made:

a2c2a. either by a simple examination or analysis of the S and P,  
 - as is the case when it is question of self-evident judgments, such as this: 'a whole is greater than its own part'.

a2c2b. or<sup>^</sup>by means of sensible experience, - as is the case in the example given: 'the clock is standing on the table'.

a2c2c. \_or by a reasoning which resolves the enunciation in question into its principles, comparing the S and P by means of a middle term (M),  
 - as is the case when it is question of demonstrated judgments, such as this: 'human soul is immortal', or this: 'the sum of the angles of a triangle is equal to two right angles'.

ACT; The fourth act or phase is the PERCEPTION of the agreement (or disagreement) of S and P AS THEY ARE THING or AS THEY ARE IN THE REAL.

a2d1. By this act the intellect perceives:

a2d1a. that there is identity (or diversity) IN THING between 'the clock' and 'a thing standing on the table';

a2d1b. or, in other words, that there is exercised IN THE REAL that identity (or diversity) which is signified in the mental construct or enunciative proposition;

a2d1c. or again, that the two concepts, to wit, 'the clock' and 'a thing standing on the table', are each conformed with (or are not each conformed with) the same thing.

a2d2. This act, like all the preceding acts, is a simple apprehension,  
 - not a judgment.

a2d2a. For by this act the identity (or diversity) in thing between S and P is CONCEIVED only, that is:

a2d2a1. known after the manner of a quiddity,

a2d2a2. or known in signified act;

a2d2b. Whereas in Judgment or assent it is EXERCISED or known in exercised act.

a2e. FIFTH ACT: The fifth act or phase is the ASSENT, (or DISSENT);

a2e1. whereby the identity (or diversity) in thing between S and P is attained AS EXERCISED.

a2e2. Which act is the very act of judgment itself, formally taken.

b. I/herefrom it follows that judgment, although materially multiplex, is formally an act one and simple.

b1. For:

b1a. One act is borne upon one object,

b1b. But the object of judgment:

b1b1. is not two or several ideas collected together,

b1b2. but the actual identity (or diversity) of S and P, - which is one and simple.

b2. As Maritain says: "It is **evident...that** the judgment properly so-called is simple, that is to say, indivisible, not decomposable into parts. It consists in the act of 'composing' or 'dividing' only so far as this act is completed in the act of assent which formally constitutes the judgment, and wherein knowledge has its term in an 'ita est', 'this is so'." (introd. to Logic. p.90).

c. NOTE that modern people often call assent by the name of 'belief', using this word in a wide sense: thus is it often said: 'I believe that two and two are four'.

c1. This wide use of the word 'belief can be admitted provided all danger of confusion is removed between:

c1a. the assent of faith (of 'belief properly so-called) which is made under the specificative influence of the will,

c1b. and scientific assent, which proceeds from the evidence of the object without the intervention of the will.

c2. For diversely, according to diverse objects whereupon judgment is borne, do the will and the affect of the mind exercise influence upon assent, as is explained elsewhere where it is question of science, faith and opinion.

ARTICLE TWO.

PROPERTIES OF JUDGMENT.

\*^01} T^TOPOLD PROPERTY OP JUDGMENT: Since judgment affirms to be or to be not IN THE THING- that which is had in the mind, there is a TWOPOID PROPERTY of judgment:

- A. Either it affirms to be IN THE REAL that which is, or to be not that which is not; and then judgment is called TRUE.
  - a. Thus in this example: ^Sydney is in Australia', it is signified that the city which is Sydney is in the real in Australia.
  - b. And in this example: ^Sydney is not in China', it is signified that the city which is Sydney is not in the real in China.
- B. Or it affirms to be IN THE REAL that which is not, or to be-not that which is: and then judgment is called PALSE.
  - a. Whereof let us take this example: ^Sydney is not in Australia\*.
  - b. Or this example: 'Sydney is in China.'

CHAPTER SEVEtTEEN.

THE SIGN OP JUDGiffINT, WHICH IS THE PROPOSITION.

\_^bRDER OP PROCEDURE: Just as simple apprehension has a WORK produced (concept), which is expressed or signified by a SIGN (oral or written term), so likewise judgment: whereof the WORK produced is the (mental) ENUNCIATION or PROPOSITION, of which SIGN is the (spoken or written) PROPOSITION.

- A. Accordingly, this treatment of the sign of judgment will treat:
  - First, of the work produced by judgment, which work is the (mental) proposition or enunciation.
  - Secondly, of the sign of that work, which sign is the (oral or written) proposition: whereof will be treated:
    - In the first place, its nature;
    - b2. In the second place, its division.
    - b3. In the third place, its properties.
- B. Hence the following order:-

	as it is the WORK,of judgment	Article one.
On the proposition	Its nature	Article two.
	as it is the SIGN Its division. of that wori	Article three.
	Its properties	Article four.

# iJiTIGLE ONE.

## THE WORK OF JUDGa-IENT. VfiHIGH IS THE ENUNCIATION.

205. NATURE OP ENUNCIATION AS IT IS THE vYOBK OP JUDGlvMEliT: As noted above:

A. JJust as simple apprehension has a WORK which is the CONCEPT (nn.lSj, 52),

a. so also judgment has a WORK, which is the (mental) proposition or ENUNCIATION.

b. and which can also be called mental word. (Cf. Hugon; Cursus Phil. t.IV, p.157).

B. The jilATTEk of the enunciation are the things, or objective concepts, which are composed or divided: which are called the extremes.

C. But its PORM is the very composition or division, which is signified by the copula 'is\*' or 'i3-not'.

a. The copula may signify materially only the composition or division, merely copulating S and P without the intellect's assenting to this composition:

al. This role of the verb is called its copulative role.

a2. And, as seen above (n.200, D. a2b5), such is the role of the verb in the mental enunciation or proposition signified or enunciative proposition before judgment.

b. But when the intellect vitally, exercisedly assents (or dissents) :

b1. the verb exercises a truly judicative office,

b2. and the proposition or enimciation resulting is a JUDICxiTIVE PROPOSITION or PROPOSITION EXERCISED - which is the WORK of judgment.

D» TliOT'Of\*o3r\*6j •

a. Whereas the ENIRTCIATIVE PROPOSITION or PROPOSITION SIGNIFIED (n.200, D.a2b2) is a work of a connotative or comparative apprehension,

b. The JUDICATIVE PROPOSITION or PROPOSITION EKERCISED is the work of JUDGMEiN?. " - - -

E. This work of judgment, which is the JUDICATIVE PROPOSITION, is produced IN THE VERY ACT OF JUDGINCr:

a. For judgment is an act of the intellect,

b. and' the WORK of Jtidgnient is the VITAL composition or division of concepts wrought by the judgment, in the very judicative ASSEliT.

c. Yet this work of the judgment is no more identified with the judgment (the act) than is the concept with apprehension.

## THE PROPOSITION, Y/HICH IS THE SIGN OP JUDGMENT.

204. PROPOSITION AS SIGN OP JUDGMENT: Proposition as it is the sign of judgment is distinguished from proposition as it is the work of judgment, just as the term is distinguished from the concept, (n.64).

A. For the work of judgment is the mental (judicative) proposition.

B. But the sign of judgment or of the work thereof is the oral or written (judicative) proposition.

C. It may be noted:

a. That in the rigour of language there is this difference between 'enunciation' and 'proposition':

al. that the sign of judgment is strictly called 'envinciation' when it is not proposed as part of a reasoning; (cf. In Periherm, I, c.4, lect.7;

in Anal. Post. I, c.2, lect.5);

a2. but is strictly called 'proposition' when it is proposed as part of a reasoning.

b. But for practical purposes the two may be taken, and are taken, as of the same value. (Cf, John of St Thomas, Cursus Phil., Logica, Prima Part, Illus. q.5, a.1).

205. **DEFINITION OF PROPOSITION:** Therefore Proposition, as it is the SIGN of judgment: SPEECH SIGNIFYING BY ASSERTING THE TRUE OR THE FALSE

- "OBATIO VERUM VEL FALSUM SIGNIFICANS INDICANDO".

A. THE MATTER of the proposition:

a. is constituted by:

a1. the SUBJECT (S),

a2. and the PREDICATE (P).

b. Which are called The extremes, inasmuch as they are to be composed.

B. The FORM of the proposition is the COPULA (IS) which conjoins the extremes.

### ARTICLE THREE.

#### DIVISION OF PROPOSITIONS.

206. **ORDER OF PROCEDURE:** In exposing the division of propositions;

^^We shall expose first their essential division. (n.207).

Next, we shall expose their accidental divisions, i.e. their divisions on the score of something which is accidental to a proposition and does not constitute its essence: and indeed:

a. first, on the score of quality (n.208);

b. secondly, on the score of their quantity (n.209);

c. thirdly, on the score of their matter (n.210).

207. **ESSENTIAL DIVISION:** Let us take;

A. These examples:

a. 'Peter is scholarly'.

b. 'his eye-lids flicker, he is alive'

c. 'Every being except God is contingent'

d. 'The brave give their lives and the cowards make money'.

e. 'There must be one head or the public weal will suffer'.

f. 'God alone is eternal'.

g- 'Man, as an animal, is sentient'.

B. The propositions: 'Peter is scholarly\*' and 'If his eye-lids flicker, he is alive', differ in this, that:

a. The proposition 'Peter is scholarly', which "HAS A SUBJECT, VERBAL COPULA AND PREDICATE AS THE PRINCIPAL PARTS OF ITSELF", is called CATEGORIC PROPOSITION.

b. On the other hand, the proposition: 'If his eye-lids flicker, he is alive', "is a PROPOSITION (PROPOSITIONS) AS THE PRINCIPAL PARTS OF ITSELF", is called a HYPOTHETIC PROPOSITION.

c. "And thus hypothetic and categoric propositions differ according to COPULATION and according to the COPULATIVE EXTREMES:

'because a hypothetic proposition unites:

1a. "NOT BY A VERB.

- clb. "but by the particle 'AND' or 'S' and such like;
- c2. "and immediately it unites:
- c2a. "not terms,
- c2b. "but PROPOSITIONS." (John of St Thomas; Logica. I, c.7, p.25b).

d. But since in the hypothetic proposition, which unites propositions, there is a composition of copulas which are the form of propositions, this DIVISION ACCORDING TO COPULAS is an ESSENTIAL DIVISION.

○ In the example given of a hypothetic proposition:

a. The composition is EXPLICIT, i.e. the two partial propositions are expressed, and for that reason this proposition is called OPENLY COMPOUND.

b. But this composition from two partial propositions may be not explicit, as in this: 'Every being except God is contingent'.

b1. Such propositions WHICH FIRST BE EXPLICATED BY SEVERAL PROPOSITIONS ARE CALLED OCCULTLY COMPOUND'.

b2. And they receive the name also of EXPLICABLE PROPOSITIONS, i.e. propositions capable of explication through resolution into several propositions.

D. For this proposition: 'Every being except God is contingent', in spite of its appearance, is not categoric, but hypothetic:

a. For although openly it contains only one proposition,

b. nevertheless there are found OCCULTLY in it other propositions, which appear if it is unfolded or exposed.

c. For in it there are three propositions, as follows;

• 'Every being other than God is contingent'.

c2. 'God is a being'.

c3. 'God is not contingent'.

E. In the openly compound proposition: 'If his eye-lids flicker, he is alive', the partial propositions are copulated by the particle 'IF'.

a. "This proposition WHOSE PARTS ARE COPULATED BY THE PARTICLE 'IF', is called a COJUNCTIVE PROPOSITION.

b. But there are other ways of copulating propositions:

b1. The proposition: 'The brave give their lives and the cowards make money', in WHICH THE TWO PARTS ARE COPULATED BY THE PARTICLE 'AND', is called a COPULATIVE PROPOSITION.

b2. But the proposition: 'There must be one head or the public weal will suffer', in which the PARTICLE IS 'OR', is called a DISJUNCTIVE PROPOSITION.

F. Similarly the occultly compound proposition is threefold:

a. The proposition 'Every being except God is contingent', WHICH IS AFFECTED BY THE PARTICLE 'EXCEPT' is called an EXCEPTIVE PROPOSITION.

b. The proposition 'God alone is eternal', WHICH IS AFFECTED BY THE PARTICLE 'ALONE' (or 'ONLY') is called an INCLUSIVE PROPOSITION.

c. The proposition 'Man, as an animal, is sentient', WHICH IS AFFECTED BY THE PARTICLE 'AS' (INASMUCH 'AS' IN SO FAR AS MUCH AS), is called a REDUPLICATIVE PROPOSITION.

LAWS OF HYPOTHETIC OR COMPOUND PROPOSITIONS are as follows:-

Laws of openly hypothetic propositions; These laws are based on the nature of these propositions, which express one truth, to wit, the truth of the whole. Therefore the laws are diverse according to the nature of the copula.

al. LAW OF THE COPULATIVE PROPOSITION: EACH PART MUST BE TRUE.

ala. Because the copula 'and' means that the truth of the whole is the sum of the truth of the members.

alb. Therefore this proposition: 'The moon is moved, and the earth is not moved', is false.

ale. Accordingly:

a1d. from the truth of the whole follows the truth of each part;

alc2. but not from the falsity of the whole follows the falsity of each part.



a2 J LAW OF THE DISJUNCTIVE PROPOSITION: IT SUFFICES THAT ONE PART  
BE

a2a. Because the copula 'or' opposes the parts in truth and falsity

a2b. Therefore this proposition: "Good is to be done and evil shunned,  
or two and two are not four" is true.

a2c. Accordingly:

a2c1. From the truth of a part, follows the truth of the whole;

a2c2. and if one part of a true disjunctive be denied, the other must  
be affirmed.

- LAW OF THE CONDITIONAL PROPOSITION: GOOD CONSEQUENCE SUFFICES.

a3a. The reason of this rule:

a3a1. Is not that the conditional proposition would affirm only the  
truth of the 'nexus', as some say (v.g. Remer; Logica Minor, ed. 1921, p.60),  
who reduce this proposition to a single proposition;

a3a2. But:

a3a2a. is because the conditional proposition "affirms something to be  
true from a supposition";

a3a2b. just ought this proposition be reduced to an argumentation (as  
Gredt reduces it: Logica Formalis, p.43):

a3a2b1. an argumentation (at least implicit) is indeed necessary to  
know the truth of the 'nexus',

a3a2b2. but this does not pertain to the essence of the proposition

a3b. Therefore:

a3b1. this proposition 'If twenty is an odd number it is not divisible  
by two' is true.

a3b2. on the other hand, this proposition 'If Australia is an island,  
five and five are ten' is false; because the former part is not the condition  
of the latter: for the proposition 'five and five are ten' is true:

a3b2a. ABSOLUTELY.

a3b2b. NOT FROM A CONDITION.

OF OCCUPYING HYPOTHETIC PROPOSITIONS: These are as follows:-

AN EXCLUSIVE PROPOSITION:

bla. is resolved into a copulative proposition whereof:

bla1. one part affirms that P agrees with S (this is the pre-jacent  
proposition: 'God is eternal'):

bla2. and 'the other part denies that P agrees with other subjects  
(Everything which is not God is not eternal').

bib. Thus the proposition 'God alone is eternal' is resolved into this  
copulative proposition: 'God is eternal and no non-God is eternal'.

b2. AN EXCEPTIVE PROPOSITION is resolved into three categoric  
propositions taken copulatively;

b2a. One universal affirmative proposition, in which the term from  
which the exception is made is predicated of the exceptive part (God is  
a being).

b2b. A negative proposition in which P is denied of the excepted  
part (God is not contingent).

b2c. An affirmative proposition: (All beings other than God are  
contingent).

b3. A REDUPLICATIVE PROPOSITION:

b5a. Is resolved into two categoric propositions.

b3b. Thus the proposition: 'Man, as an animal. is sentient'. is  
resolved into these two propositions:

b3b1. 'Man is sentient'.

b3b2. 'The reason why man is sentient is that he is an animal'.

208.1 DIVISION ON THE SCORE OF QUALITY:" Propositions are divided both on  
the score of the quality OF THE COPULA, and on the score of the  
quality OF THE PREDICATION.

A. ON THE SCORE OF THE QUALITY OF THE COPULA propositions are  
divided into:

a. AFFIRMATIVE propositions: v.g. 'Peter is truthful'.

b. and NEGATIVE propositions: v.g. 'Peter is not a liar'.

B. BUT ON THE SCOPE OF THE QUALITY OF THE PREDICATION propositions are divided into:

a. Simply ATTRIBUTIVE propositions, which enunciate only that P is-in is-not~in S.

a1. VYherefore these propositions are called propositions OP IN-BE (propositiones de inesse).

a2. As examples take these:

a2a. 'Man is an animal'.

a2b. 'Peter is avaricious'.

a2c. 'Peter is not a liar'.

b. MODAL propositions:

b1. Which enunciate:

b1a. not only that P is-in or is-not-in S.

b1b. but also that MODE in which P is-in or is-not-in S.

b2. As examples of modal propositions^ let us take these:

b2a. 'It is possible that Peter be ill'.

b2b. 'It :Is impossible that Peter be an angel\*.

b2c. 'It :Is contingent that Peter be in good health

b2d. 'It iLs necessary that Peter be mortal\*\*

b3. In a modal proposition IVO ELEivMENTS are to be distinguished, to wit, 'dictum' and the mode.

b3a. The 'DICTUM' is that part which enunciates the composition of P with S. Thus, in the proposition 'It is necessary that Peter be mortal', the 'dictum' is 'Peter be (is) mortal'.

b3b. The MODE is that part which determines the mode or manner of this composition of P (mortal) with S (Peter). Thus, in the proposition 'It is necessary that Peter be mortal', the mode is 'It is necessary'.

b4. "Because modal proposition is named from 'mode', in order to know what is a modal proposition:

b4a. "it is necessary previously to know what is a mode. But it is a detemdnation affecting a thing (determinatio adiacens rei), which indeed happens:

b4a1. "through the adjection of an adjective, which determines a sub-stantive, as when it is said 'the man is v/hite',

b4a2. "or through an adverb. which determines a verb, as 'the man is running well\*.

b4b. "It is to be known also that mode is threefold.

b4b1. "A certain mode determines the subject of a proposition, as 'a white man is running'.

b4b2. "A certain mode determines the predicate, as 'Socrates is a white man' or 'Socrates is rionning swiftly'.

b4b3. "A certain mode determines THE "VERY COMPOSITION ITSELF OF THE PREDICATE YITITH THE SUBJECT, as when it is said 'that Socrates run is impossible'; and PROM THrs MODE ALONE IS A PROPOSITION CALLED MODAL.

b4c. "But other propositions, which are not modal, are called (propositions) of in-be.

b4d. "But the modes which determine the composition are six, to wit:

b4d1. "true,

b4d2. "false,

b4d3. "necessary,

b4d4. "impossible,

b4d5. "possible,

b4d6. "contingent.

b4e. "But:

b4e1. "true and false add nothing over the significations of propositions of in-be; for the same is signified when it is said:

b4e1a. "'Socrates is not running' and 'that Socrates be running is false',

b4e1b. "and 'Socrates is running\* and 'that Socrates be rmning is true'.

b4e2. "YiThich is not the case with the other fotir modes, because not the same is signified, when it is said:  
 b4e2a. "'Socrates is running\*,  
 b4e2b. "and 'that Socrates be running is possible'." (St Thomas: De Propos. Modal).

b5. 'j/herefore:  
 b5a. There are four modes which render a proposition modal, to wit:  
 b5a1. Necessary,  
 b5a2. Impossible,  
 b5a3. Possible.  
 b5a4. Contingent.  
 b5b. Of which two affect only propositions which ARE NOT in matter, to wit:  
 b5b1. possible,  
 b5b2. and contingent,  
 b5c. And of which ^/o affect propositions which AKE in NECESSARY matter, to wit:  
 b5c1. necessary,  
 b5c2. and impossible.

b6, KANT makes another division:  
 b6a. For he - according to the tenets of his subjectivism - :  
 b6a1. speaks rather of "modalities of judgment" than of modes of proposition, since he is dealing with the subjective possibility or necessity of the act of judging, - not of the possibility or necessity of the relation expressed by the judgment or proposition, as does a philosophy of realism.  
 b6a2. And Kant distinguishes three modalities of judgment, to wit:  
 b6a2a. The mode of reality, proper to assertory judgments;  
 b6a2b. The mode of contingency, proper to problematic judgments;  
 b6a2c. The mode of necessity, proper to apodictic judgments.  
 b6b. ViThich division IS TO 3E REJECTED.:  
 b6b1. Not only because assertory propositions are not modal, but are simply attributive, - in -which case the quarrel would be about words only;  
 b6b2. But also - and chiefly - because Kant's division is based upon a pseudo-problem arising from the tenets of his subjectivism, vdiich beget for him the necessity of distinguishing possibility and necessity:  
 b6b2a. not as modes of reality,  
 b6b2b. but as modes of judging.

209. DIVISION ON THE SCORE OP QUANTITY: The quantity of a proposition is the property possessed by a proposition of commiinicating the P to a greater or less multitude of individuals in attributing it to S.

Therefore this division of propositions is taken from the quantity of S.

a. Yftierefore it corresponds to the division of concepts on the score of their extension (n.50), and therefore is had the following division of propositions:

fINDEPINITB: v.g. 'Man is bloodthirsty'.

Proposition	UNIVERSAL: v.g. 'Every man is mortal'.
comoN	PARTICULAR: v.g. 'Some man is mortal'.
FINITE	SINGULAR: v.g. 'This man is guilty'.

a1. Therefore there is no need to delay upon this division.  
 a2. In logic the indefinite proposition (i.e. the proposition whose subject lacks any sign manifestative of its qxiantity, such as 'every' or 'some' or 'this') must be taken for universal or particular or singular as it is in reality: thus:

a2a. the proposition 'man is bloodthirsty' ought to be taken as particular.

a2h. the proposition 'man is mortal' ought to be taken as universal.

a2c. the proposition 'man, dyinjj, redeemed the whole race of men'; ought to be taken as singular (of Christ).

h. haCHBLIER, it may however be noted, proposes a division of propositions into particular, partially collective, universal and collective. (Etudes sur le Syllogisme, pp.46ss7•

hi. For:

hla. He distinguishes 'propositions such as 'every man is mortal' propositions such as 'all the members of this family are learned', or 'all the apostles were present at the Last Supper'.

hlal. "He calls the former universals, because they bear immediately upon a nature concerning which they state a law, and bear only mediately upon the individuals having this nature;

hla2. "he calls the latter collective, because they bear immediately upon a collection of individuals, and express a simple fact.

hlh. "he distinguishes similarly between propositions such as 'some men are sincere' and propositions such as 'some members of this family are learned'.

hlhl. "He calls the first propositions particular, because they bear upon a nature, restricted this time, indeed, in extension, and because they imply a sense of right as well as a fact (human nature is not exclusive of sincerity).

hlh2. "He calls the second partially collective because they treat of a mere collection of individuals taken partially, and express nothing more than a fact." (Maritain's Introduction to Logic, pp.117-118),

h2. To which it is to be answered:

h2a. "In truth, propositions such as 'all the apostles were present at the Last Supper' and 'some members of this family are learned' are not collective propositions; only a proposition whose subject is taken collectively (in other words, has a 'suppositio copulata') - cf. n.70, E. - "in relation to the Pr. is a collective proposition. E.g. 'the apostles were twelve',... **Therefore** Mr. Lachelier's terminology must be rejected.

b2b. "A universal proposition such as 'Every man is mortal' has a double signification: it bears first and immediately upon the universal nature man taken in all its universality, and mediately upon the separate individuals taken one by one who possess this nature. Thus a proposition such as 'man is sincere' bears primarily and immediately upon the universal nature man taken in a certain indeterminate individual (individuum vagum) and mediately and secondarily upon such and such an individual having this nature.

b2c. "Now let us consider propositions such as 'all men are mortal', 'some men are sincere'; they also have a double signification, but in the inverse order; they start with the individuals and proceed thence to the nature. Although these propositions (universal in the first case, particular in the second) are used in everyday language, for the logician, from the strict point of view of the art of reasoning, they are incorrectly formulated. For reasoning is essentially concerned with the universal nature communicable to individuals, and it is this nature that must be emphasised in a correct formulation. In the language of Logic..... universal propositions should be expressed by: 'Every.....is,' and not by 'all...are.....', and particulars by: 'some..is.....' not 'some.....are.'.

b2d. "Finally, propositions such as those which Mr. Lachelier considers (all the apostles were at the Last Supper, some members of this family are learned), belong to the same type as those preceding (the first universal, the second particular), but by reason of their matter bear only upon a collection or series of individuals (taken divisively as Mr. Lachelier does not see), and are in the same act limited to the simple expression of a fact,

b2e. "However, Mr. Lachelier is quite right in saying that if a universal does nothing but signify a fact, without telling anything about a nature, then it cannot be used as a true Major in a syllogism of the first figure....." (Maritain; loc. cit. pp.118-119).

A. For the MATTER of a proposition is its terms, inasmuch as they are considered according to their relation to each other.

B. But the matter of a proposition is threefold, to wit:

a. If P necessarily Befits S, the matter is NECESSARY, as in the proposition 'man is an animal'.

B. If P only contingently Befits S, the matter is CONTINGENT, as in the proposition 'the man is a carpenter'.

c. If P is repugnant to S, the matter is IMPOSSIBLE, as in the proposition 'man is an angel'.

C. Accordingly:

a. The proposition 'man is an animal', WHICH ENUNCIATES SOMETHING WHICH CANNOT BE OTHERWISE, is called a NECESSARY PROPOSITION or PROPOSITION IN NECESSARY MATTER.

B. The proposition 'the man is a carpenter', WHICH ENUNCIATES SOMETHING WHICH CAN BE OTHERWISE, is called a CONTINGENT PROPOSITION or PROPOSITION IN CONTINGENT MATTER.

c. The proposition 'man is an angel', WHICH ENUNCIATES SOMETHING WHICH CANNOT BE, is called an IMPOSSIBLE PROPOSITION or PROPOSITION IN IMPOSSIBLE MATTER.

D. Therefore:

a. In NECESSARY matter:

a1. Every affirmative proposition is necessary,

a2. While every negative proposition is impossible.

B. In IMPOSSIBLE matter:

B1. Every affirmative proposition is impossible,

B2. While every negative proposition is necessary,

c. In CONTINGENT matter: Both affirmative and negative propositions are contingent.

211. SCHEMATIC SUMMARY: Accordingly, the division of propositions may be thus schematically exhibited:-

into CATEGORIC (or SIMPLE)			
Propositions are divided;	ESSENTIALLY reason of copula)	COPUMTIVE.	
		5penly DISJUNCTIVE.	
		conditional.	
	and HYPOTHETIC	EXCEPTIVE.	
		occultly^ EXCLUSIVE.	
		REDUPLICATIVE.	
		NECESSARY.	
	reason of matter	CONTINGENT.	
		IMPOSSIBLE.	
		AFFIliATIVE.	
	of the copula	NEGATIVE.	
AGCID- EIFTALLY	to wit, of the quality	SBIPLY ATTRIBUTIVE,	
	of the predic-i ation	in nec- essary matter	NECESSARY.
			IMPOSSIBLE.
	by reason of some accident,	MODAL	
		in non- necessary matter	CONTINGENT.
			POSSIBLE.
		INDEFINITE.	
	to wit, of the quantity	SINGULAR-	
		FINITE	UNIVERSAL.
		COMMON	
		PARTICULAR.	

ARTICLE FOUR.

PROPERTIES OF PROPOSITIONS.

212. ORDER OF PROCEDURE: Since the properties of propositions are four:

- A. To wit:
  - a. Identity;
  - b. Opposition;
  - c. Equipollence;
  - d. and conversion;
- B. These properties will be dealt with in turn.
- C. Hence the following order

On the properties of propositions:	<b>Identity...</b>	Dissertation one.
	<b>Opposition..</b>	Dissertation two.
	<b>Equipollence...</b>	Dissertation three.
	<b>Conversion...</b>	Dissertation four.

DISSERTATION ONE.

IDENTITY OF PROPOSITIONS.

213. NOTION AND DIVISION OF IDENTITY OF PROPOSITIONS: Concerning these it is sufficient to observe:

- A. That the identity of propositions is the property by virtue whereof two or more propositions express THE SAME TRUTH.
- B. The identity of propositions is twofold, to wit:
  - a. EXPLICIT identity which is had according as several propositions express by diverse terms the same truth with THE SAME CONCEPTS: as an example, take these two propositions:
    - a1. 'Homo est mortalis';
    - a2. 'Man is mortal'.
  - b. IMPLICIT identity, which is had according as several propositions express the same truth by diverse terms and DIVERSE CONCEPTS:
    - b1. As an example, let us take these two propositions:
      - L1a. 'Man is mortal\*';
      - L1b. 'Rational animal is mortal'.
    - b2. In these examples the subjects differ conceptually: for in the latter, the subject is the definition which, manifesting the subject of the former example (the defined: 'man'), expresses it in a more distinct way.
- C. Which may be thus summarized:
  - a. There is IDENTITY of propositions provided they express THE SAME TRUTH, - even though they express it by diverse terms and even diverse concepts.
  - b. And indeed:
    - b1. if they express it by diverse terms but the same concepts, then the identity is EXPLICIT;
    - b2. but if they express it by diverse terms and also diverse concepts, then the identity is IMPLICIT only.
  - c. Which may be thus shown schematically:-

IDENTITY of propositions		
	EXPLICIT	IMPLICIT
Terms	Diverse	Diverse
Concepts	DIFFERENT	Diverse
Truth	SAME	SAME

214. CONDITIONS REQUIRED FOR IDENTIFICATION OF TRUTH, OR FOR IDENTIFICATION, AT LEAST IMPLICIT, OF PROPOSITIONS; In order, therefore, that we may be able to diagnose which propositions are identical, at least implicitly, it is necessary to know the conditions required for identity of TRUTH.

These conditions are two, to wit:

- a. The SUBJECTS of the propositions must be FORMALLY, even though implicitly only, THE SAME.
  - a1. And they are indeed FORMALLY THE SAME provided they do not differ by a distinction greater than that which is between the implicit and the explicit, or in other words, provided they do not differ by a distinction greater than a minor based mental distinction, or again in other words, provided they do not differ more than according to formal precision. (Cf. Aristotle II-III).
  - a2. Thus, for example:
    - a2a. Identical are the truths expressed by these two propositions, 'and consequently (implicitly) identical are these two propositions:
      - a2a1. 'Man is mortal'.
      - a2a2. 'Rational animal is mortal'.
    - a2b. But not identical are the truths expressed by these two propositions, and consequently not identical are those two propositions: 'Man is mortal' and 'animal is mortal';
      - a2b1. Because 'man' and 'animal' are NOT FORMALLY, but ONLY VIRTUALLY the same subjects:
        - a2b2. And indeed:
          - a2b2a. NOT FORMALLY THE SAME subjects, because they differ by a distinction greater than that which lies between the implicit and the explicit;
          - a2b2b. but VIRTUALLY THE SAME subjects, because there is inference (by a genuinely illative syllogism) from one to the other, inasmuch as it follows that if one (animal) receives a certain predicate (v.g. 'mortal') then the other also receives it.
  - b. The PREDICATES of the propositions must be FORMALLY, even though implicitly only, THE SAME.
    - b1. Thus identical are the truths expressed by these two propositions, and consequently (implicitly) identical are these two propositions:
      - b1a. 'Peter is a man';
      - b1b. 'Peter is a rational animal'.
    - b2. But not identical are the truths expressed by these two propositions, and consequently not identical are these two propositions:
      - b2a. 'Peter is a man';
      - b2b. 'Peter is an animal'.

215. SOME EXAMPLES: It will be helpful here to give some examples both of identical propositions and of diverse propositions.

A. EXAMPLES OF (EXPLICITLY) IDENTICAL PROPOSITIONS:



- a. First example:
  - a1. "The Father and I are one." (John 10.50).  
"The Father and the Son are consubstantial".
  - a2. For to be one and to be consubstantial signify the same: they differ only according to implicit and explicit.
- b. Second example;
  - "The Virgin Mary is the mother of Jesus Christ."
  - "The Virgin Mary is the mother of God".
  - b2. For Jesus Christ and God are as defined and definition, differing therefore only according to implicit and explicit.
- c. Third example:
  - 'Christ is perfect God and perfect \_man'.
  - 'Christ has a divine nature and a human nature, a divine will and a human will, a divine operation and a human operation, and a divine knowledge and a human knowledge'.
  - c2. For here the predicates likewise differ only as defined and definition, and accordingly only according to implicit and explicit.

#### B. SIMPLICITY OF DIVERSE PROPOSITIONS:

- a. These propositions: 'God is good'.  
'God is just'.  
'God is merciful'.
- b. Are not identical, because these predicates are only VIRTUALLY identical, since:
  - b1. one cannot be inferred from another by a merely explicative syllogism,
  - b2, but a TRULY illative syllogism is required.

### DISSERTATION TWO.

#### OPPOSITION OF PROPOSITIONS.

#### 216. LOGICAL OPPOSITION: Whereas:

A. The opposition OF CONCEPTS - which is the same as the opposition OF THINGS, wherefore it is called PHYSICAL opposition - has been dealt with earlier (nn.57-58).

B. Here is to be treated LOGICAL opposition or the opposition OF PROPOSITIONS. which is THE PROPOSITION OF PROPOSITIONS BY VIRTUE THEREOF THERE. is HAD AFFIRMATION AND NEGATION OF THE SAME ABOUT THE SAME.

#### 217. GENERAL RULE OF OPPOSITION: Since the opposition of propositions is affirmation and negation of the same about the same:

- A. It is required for opposition of propositions that P and S remain the same:
  - a. according to the same signification,
  - b. and according to the same genus (not species) of supposition.
- B. But the KIND of supposition is:
  - a. material,
  - b. formal,
  - c. simple,
  - d. and personal, (cf. n.70).

- C. Therefore, for example, the proposition 'man is a species'
- 'There 'man' has simple supposition:
    - a. is not contradicted by the proposition 'no man is a species'
  - where 'man' has personal supposition,\*
    - b. but is contradicted by the proposition 'man is not a species'
  - where 'man' retains simple supposition.

218. DIVERSE SPECIES OF OPPOSITION: The understanding of the diverse species of opposition of propositions will be helped by means of the figure known as 'the square of opposition'.

A. The 'square of opposition' is this:



Irmo

g0

3. For the understanding of this figure, note:
- That of the same subject and predicate;
    - six propositions can be formed, and six only, to wit:
      - ala. universal affirmative,
      - alb. universal negative,
      - ale. particular affirmative,
      - aid. particular negative;
      - aie. singular affirmative,
      - alf. singular negative'.
    - In the above schematic figure, singular propositions are not indicated, since in regard to oppositions they are assimilated to particulars.
  - The capital letters A, E, I and O (which are vowels from the words 'affirmo' and 'negro') are used to designate the diverse propositions, thus:
    - A designates the universal affirmative;
    - E designates the universal negative;
    - I designates the particular affirmative;
    - O designates the particular negative.

G. But from the four propositions which have the same S and P, there can be only six combinations, as thus illustrated:-'

**AE...Every** man is wise. — . — No man is wise.  
**AI...Every** man is wise.... .Some man is wise.  
**AO.....** .Every man is wise...**Some** man is not wise.  
**EI.....** .No man is wise.**Some** man is wise.  
**EO.....No** man is v/ise.... .Some man is not wise.  
 10. — . .Some man is **wise..** .Some man is not wise.

C. But OBSERVE that:

a. Neither AI nor EO are properly opposites, since they are not opposed according to affirmation and negation.

h. Therefore there remain only four OPPOSITE combinations.

D. The propositions AO and EI are opposed in the same way, to wit, NOT ONLY IN QUALITY BUT ALSO IN QUANTITY.

a. Therefore the propositions AO and EI have the same opposition between them. This opposition is called CONTRADICTORY.

b. CONTRADICTORY are PROPOSITIONS WHICH ARE REPUGNANT IN TRUTH AND IN FALSITY, SO THAT THEY CANNOT BE TRUE TOGETHER NOR FALSE TOGETHER.

b1. For A (or e) says that 'agrees' (or does not agree) universally with S.

b2. Therefore the same P cannot together disagree (or not disagree) particularly with a S contained under the universal.

b5. And vice versa, what agrees (or does not agree) with some particular S cannot together disagree (or not disagree) with the universal S under which the particular S is contained.

c. Therefore in contradictories:

c1. From the truth of the one proposition, necessarily follows the falsity of the other;

c2. And from the falsity of the one proposition, necessarily follows the truth of the other.

E. But it is otherwise with AE and 10.

a. They are opposed indeed in quality, but NOT IN QUANTITY:

a1. In AE both are universal;

a2. In 10 both are particular.

b. However in AE the opposition in quality is universal, but in 10 it is particular. AE accordingly are called CONTRARIES, while 10 are called SUB-CONTRARIES,

bi. 'contrary' are PROPOSITIONS WHICH ARE REPUGNANT ONLY IN TRUTH. SO THAT TWO CONTRARY PROPOSITIONS CANNOT BE TOGETHER TRUE, BUT CAN BE TOGETHER FALSE

bi1. That they cannot be together true is clear from this, that the same P cannot together be affirmed and denied universally of the same S.

bi2. Yet they can be together false, because each proposition affirms or denies universally, while the truth may lie in a particular affirmation or negation (in contingent matter). Thus false together are those two propositions:

bi11. 'Every man is wise' ;

bi12. 'No man is wise'.

bi13. Therefore:

bi14. From the truth of one proposition can be concluded the falsity of the other;

bi15. But not from the falsity of one can be concluded the truth of the other.

^2. SUBCONTRARY are PROPOSITIONS WHICH ARE REPUGNANT IN FALSITY BUT NOT IN TRUTH. SO THAT THEY CAN BE TOGETHER TRUE BUT NOT TOGETHER FALSE.

b2a. For:

b2a1. if one is false, its contradictory (which is universal) is true, and therefore the particular contained thereunder is true;

b2a2. therefore they cannot be together false.

b2b. On the other hand:

b2b1. If one true particular proposition is in CONTINGENT matter, the other (opposite) particular proposition can be together true.

'b2b2. But this is not so in NECESSARY matter: for then the true particular proposition is contained under a true universal, which is the contradictory of the other particular proposition: which accordingly is necessarily false.

c. ADthough the propositions AI and EC), which are called SUBALTERN., are not properly opposite, since they are of the same quality, the following may be noted regarding them:

c1\* Pi NECESSARY MATTER they are together true or together false,

cla. For whatever is true of the universal is true of the particular contained beneath it;

clb. And whatever is false of the universal is false of the particular contained beneath it.

c2. IN CONTINGENT MATTER:

c2a. If the universal is true, the particular contained beneath it is true likewise, for the same reason.

c2b. But if the universal is false, it does not follow that the particular contained beneath it is false.

c3. Therefore;

c3a. it follows:

c3a1. that if the universal is true, the particular contained beneath it is true;

c3a2. that if the particular is false, the universal which contains it is false.

c3b. But:

c3b1. it does not follow that if the universal is false, the particular contained beneath it is false;

c3b2. nor does it follow that if the particular is true, the universal which contains it is true.

#### F. PARTICULAR RULES:

##### a. AS REGARDS INDEFINITE PROPOSITIONS:

a1. Contradiction is made by the simple negation of the copula, (unless, by a distributive particle, such as 'every' or 'some', the genus of supposition be changed);

a2. For:

a2a. The proposition 'man is avaricious' has as its contradictory 'man is NOT avaricious'.

a2b. But:

a2b1. The proposition 'every man is avaricious' has as its contradictory 'some man is not avaricious' (not 'every man is not avaricious' which is the contrary, being equivalent to this: 'no man is avaricious');

a2b2. The proposition 'some man is avaricious' has as its contradictory 'no man is avaricious' (not 'some man is not avaricious', which is its contrary).

b. AS REGARDS A SINGLE PROPOSITION - which has not opposition properly so-called save with its contradictory:

b1. Contradiction is made by the simple negation of the copula.

b2. Thus the proposition 'Peter is avaricious' has as its contradictory 'Peter IS NOT avaricious'.

c. AS REGARDS MODAL PROPOSITIONS oppositions are effected by negation of the mode and by change of the quantity of the 'dictum'.

c1. The signaletic letters of the modes are as follows:

cla. A designates a proposition in necessary mode;

clb. E designates a proposition in impossible mode;

clc. I designates a proposition in possible mode (possible affirmative);

cld. O designates a proposition in contingent mode (possible negative).

c2. Therefore the "square of opposition" of modal propositions is as shown in the following diagram:-

a. AS REGARDS C01@ITIONAL PROPOSITIONS:

ai. The signaletic letters are as follows:

aia. A aesignates 'always **if**;

aib. E aesignates 'never **if**\*;

aic. I aesignates 'sometimes **if** — **is**' j

aia. 0 aesignates 'sometimes **if-is** not'.

a2. Therefore the "square of opposition" of conaitional propositions is as shown in the fcllovd.ng aiagara:-

e. AS KEGAEDS CORJLATTIV<sup>h</sup> AND DISJ-ONCTIVS -PROPOSITIONS:

e1. The signaletic letters are as folloY/s:

ala. A designates a copulative proposition y/hereof both parts are a.ffiarniative;

elb. E designates a copulative proposition whereof both parts fire negative;

elc. I designates a disjunctive proposition whereof both parts affirmiative;

eld. 0 designates a disjunctive proposition whereof b<sup>h</sup> parts are negative.

e2. Therefore the "squ,are of opposition" in these propositions is as shown in the following diagram:-

G. Wherefrom it is clear that CQNTRACTICTOKY OPPOSITION IS THE GREATEST OF ALL OPPOSITIONS, both in things (where opposition is physiciiiy and in propositions (whore opposition is logical).

a. For that opposition is greater which more destroys the opposite.

b. But contradictory opposition alone absolutel;/ and in every way dest.roys its opposite:

b1. For a contradictory has nothing wherein it might agree v/ith its contradictory;

b2. But other opposites leave somethin/;^ vdierein they may agree with their opposite.

c1. CONTRARY opposition:

cla. If it is RIYSICAL, lies between two positive forms:

cla1. Tib-ich agree in the same genus,

cla2. and can also agree together in the same subject, if they are in remiss degrees, as red and blue can co-exist as violet.

clb. Likewise, if it is LQOIGALj if does not take away in one proposition all that is in the othei', since at least it does not take away universality and distribution:

clb1. for in universality and distribution contrary propositions must agree;

clb2. and consequently they have something, to wit, falsity, in which they may agree.

c2. Likewise SUBCONTR/ffileTY does not take away particularity, and consequently neither truth, but two subcontrary propositions:

c2a. are together particular,

c2b. and can be together true.

c3. PRIVATIVE opposition:

c3a. does not take away aptitude for the opposite form,

c3b. but leaves this aptitude: wherefore at least on this head it leaves some agreement with its opposite.

c4. RELATIVE opposition:

c4a. leaves agreement:

c4a1. in the quasi-genus of being,

c4a2. and indeed in the same proximate genus of relation.

c4b. Therefore those which are relatively opposite:

c4b1. are together by nature,

c4b2. and therefore do not destroy each other (physically),

c4b3. but mutually infer each other.

c5. But in CONTRADICTORY opposition:

c5a. the negation of the one is so pure and absolute that it takes away every agreement with its extremej

c5b. and so it leaves:

c5b1. neither be,

c5b2. nor aptitude.

c5b3. nor universality,

c5b4. nor particularity.

### DISSERTATION THREE.

#### EQUIPOLLENCE OR OBVERSION OF PROPOSITIONS.

219. NOTION OP IQUIPOLLENCE OR OBVERSION: Propositions which signify the same are generally called equipollent.

A. But here equipollence is taken more narrowly, so that equipollence is the equivalence of two propositions, wiich by means of the negative particle 'not' have been changed from opposites into equivalent.

B. Hence EQUIPOLLENCE is defined: EIE PROPERTY OP PROPOSITIONS VMICH. BY Iffians CP THB NB3-ATING PARTICLE 'NOT'7 PROM OP^OSITSS BECOME EQUIVALEM:.

C. Accordingly:

a. In equipollence are to be distinguished:

a1. the term wherefrom which is the OBVERTEI^ID;

a2. the term whereunto which is the OBVEEISE.

b. Which ma^c be illustrated by this example:

b1. Let the OBVERTEND be this proposition: 'All men are jealous':

b2. By means of the particle 'not' pls-ced before the subject it becomes equivalent to its contradictory ('some men are not jealous'), for it becomes: 'not all men are jealous': isich is the OBVERSE

220. RULES OF OBVERSION: The rules for obverting opposite propositions into equipollent or equivalent propositions are the following;

A. To obvert a proposition into the equipollent of its CONTRADICTION; PUT THE NEGATING PARTICLE BEFORE THE SUBJECT,

B. To obvert a proposition into the equipollent of its CONTRARY: PUT THE AFFIRMING PARTICLE BEFORE THE SUBJECT.

C. To obvert a proposition into the equipollent of its SUBALTERN: PUT THE NEGATING PARTICLE BOTH BEFORE AND AFTER THE SUBJECT.

D. NOTE that SUBCONTRARIES do not admit equipollence or obversion: for if negation is put after the subject of an I proposition, what results is not equipollent (equivalent) propositions, but identical propositions.

E. To illustrate the above rules, let us obvert this proposition:  
'all men are jealous'

this OBVERSE; 'NOT all men are jealous',

is  
obverted  
into

which is EQUIPOLLENT to this: 'some men are not 'jealous', which is the CONTRADICTION of the obvertend.

this OBVERSE: 'All men are NOT 'jealous'.

This OBVERTSND  
'all men are jealous' is  
obverted into

which is EQUIPOLLENT to this: 'no men are jealous', which is the CONTRARY of the obvertend.

this OBVERSE: 'NOT all men are NOT 'jealous',

is  
obverted  
into

which is EQUIPOLLENT to this: 'some men are jealous', which is the SUBALTERN of the obvertend.

DISSERTATION FOUR.

CONVERSION OF PROPOSITIONS.

221. NOTION OF CONVERSION: The proposition 'no man is a quadruped', by the inversion of its terms becomes this: 'no quadruped is a man' which is likewise true.

A. This PROPERTY OF A PROPOSITION (WHICH, ITS TERMS BEING INVERTED, RETAINS ITS TRUTH, is called CONVERSION)

B. In conversion are to be distinguished:

- a. The CONVERTEND; v.g. 'no man is a quadruped',
- b. The CONVERSE; v.g. 'no quadruped is a man'.



C. That conversion may be done rightly, it is required:

- a. That the entire S be converted into the entire P: wherefore the proposition: 'Peter sees a snake':
  - al. is not converted into this: 'a snake sees Peter\*',
  - a2, but into this: '(someone) sees a snake is Peter'. (Cf. n.66).
- b. That the same genus of supposition be kept. (Cf. n.217.B), - as will appear from the next paragraph.

D. It may be NOTED:

- a. That many modern writers deem conversion (and also obversion) to be immediate argumentations, which may be expressed in this fashion: 'every man is an animal; some animal is a man\*.
- b. However:
  - b1. As will appear from what will be said about reasoning and argumentation in the third book of logic, there are no immediate argumentations.
  - b2. But that conversion (and-like obversion) are not immediate argumentations is already clear:
    - b2a. Because equipollent, and also converse, propositions, enunciate the same truth, at least partial;
    - b2b. whereas argumentation is a speech signifying the sequel of one from another.

222. SPECIES OF CONVERSION: Since in the conversion of a proposition, truth must be retained, attention must be paid, as said above (n.221), to the rules of supposition (n.71).

A. In the example given above ('no man is a quadruped: \*no quadruped is a man\*'), the extremes are inverted without the quantity of the proposition being changed. For both propositions are universal.

- a. The reason is, because in negative propositions, P supposes distributively, i.e. universally. (Cf. n.71).
- b. This conversion IN WHICH THE QUANTITY OF THE PROPOSITION IS NOT CHANGED, is called SIMPLE CONVERSION.

B. But if we take this proposition 'every man is an animal': ;

- a. Since P of an affirmative proposition supposes disjunctively, i.e. particularly, (n.71),
- b. the quantity of the proposition must be changed, so that the converse is 'some animal is a man\*.
- c. This conversion IN WHICH THE QUANTITY OF THE PROPOSITION IS CHANGED is called ACCIDENTAL CONVERSION.

C. However, in order that conversion, whether simple or accidental, be possible, it is not enough to pay attention to the supposition of P. Heed must also be paid to the supposition of S.

- a. In the examples so far given the conversions, are valid because the supposition of S is not greater in the converse propositions: since the quantity of each is universal, there is no difficulty.
- b. But it is otherwise with S in an O-proposition: for the proposition 'some man is not lazy' cannot be converted into 'every lazy (thing) is not a man\*', because S (some man), which in the former proposition is particular, becomes universal in the latter.
  - c. Therefore:
    - c1. The conversion of an O-proposition is done by infinitating the inverted terms, leaving the quantity of the proposition unchanged;
      - c1a. Thus the convertend 'some man is not lazy' is converted into this converse: 'some non-lazy (thing) is not non-man\*.
      - c1b. This conversion IN WHICH THE QUANTITY OF THE PROPOSITION IS NOT CHANGED. BUT THE TERMS BECOME INFINITATED. is called CONVERSION BY CONTRAPPOSITION.
    - c2. An A-proposition also can be converted in this way:
      - c2a. Thus 'every man is an animal' is converted into 'every non-animal is a non-man\*.
      - c2b. But since in this mode of conversion the extremes become infinite, this mode of conversion is not much employed IN PRACTICE by logicians.

D. Therefore the species of conversion may be thus schematically exhibited:-

Conversion of  
a proposition  
threefold,  
to wit:

either SUGLE. which is OOWUEfION IN TOICH TIE QUMTITY  
OF THE mOPOSITIOH IS HOT GliANGED,  
or ACCIDEljTAL, which is GQIfiffiRSIQM IN WHICH THE QUAISITITY  
OF TIIS mOK)SITION IS Chll'iGEDr  
or BY COM'RAPOSITION. which is CQlIVER^SION PI TJHICH THE  
QUANTITY OF THE PROPOSITION IS NOT CHAiiCSD, BUT THE Ti^vIS  
'BECOMB INFINITB.

223. RULES OF CONVERSION: IVom what has been said:

- A. It is clear that:  
a. E and I are converted simp^/\*,  
b. E and A are converted accideiteil.ly;  
c. A and O are convei'ted by contraposition.
3. TYhich is thus mnemotecimically summarized:  
a. Simply fEcI,  
b. Accidentally EvA^  
c. by contraposition AstO.
- C. Y/hich rules may be thus exemplified

EXAMPLES OF CONVERSION

CONVEKTHO	KIND OF PROPOSITION	MODE OF CONVERSION	COrr>n/ERSE
•No man is a quadruped'			'No quadruped is a man
	c	simply	
'Some man is cruel	I		'Some cruel (thing) is a nan'.
'Mo man is a quadruped	E,		'Some quadruped is not a man'.
	v	accidentally	
'Every man is an animal	A		'Some animal is a man'
'Every man is an animal			! Every non-animal is ttion-man'.
		contra- position	
'Some man is not lazy'			'Some non-lazy (thing) is not non-man'.

- D. It is to be NOTED that:  
a. Propositions whereof P has the same' extension as S, (vdiich is the  
case when P is a definition of S, as in this 'every man is a rational  
animal' or 'every man is risible'), are SIMPLY convei'ted.  
al. Thus:  
ala. 'every man is a rational animal' is SQUILY converted thus:  
\*every rational animal is a man';  
alb. and""every is risible' is SEJPLY converted to this: 'every  
risible (being) is a man\*.

- b. But this is HOT COirVEjISIQN PROPgRLY GO-CALLED:
- b1. For in every affirmative proposition P has disjunctive or particular supposition (n,71,3),
- b2. Wherefore the second proposition 'every rational animal is a man\*:
- b2a. no longer says THE SAiviS TRUTH as the first proposition 'every man is a rational animal'.
- b2b. but" says a RfRTPIIijR, and therefore AlmOIBER, TRUTH; for it says:
- b2b1. not only that 'some rational animal is a man' - which is the converse of the first proposition, and which is T^ Sj5t!E TRUTH with it, otherwise said,
- b2b2. but also that 'there is no rational animal which is not a man' - which is not the converse of the first pr'Oposition, but is AHQOTHER TRUTH.
- b3. Therefore from this process is had:
- bba. not AITOTHIR KRQFOGITIOM EXPRESSING THE SAMS TRUTH, such as is had in conversion properly so-called,
- b3b. but rather another proposition expressing AINfOTHiiR TRUTH.

SEGTICN WO.

FREDICATION,

224. ORDER OF PROCEDURE: This section:

- A. Will deal:
  - a. First, vrith predication in signified act }
  - b. Secondly, with predication in exercised act.
- B. Hence the following order :-

On predication	in signified act	Chapter eighteen.
	in exercised act	Chapter nineteen.

. CHAPTEEI EIGHTEEH.

PREDICATION IN SIGNIFIED ACT..

225. ORDER OF PROCEDURE: This treatment of predication in the abstract or in signified act:

- A. Will consider:
  - ^irst, the nat'ore of predication;
  - Sscondly. the modes of essential predication (of predication 'per se'y, .since essential predication (predication 'per se') is of the highest importance with regard to demonstration.
- 3. Hence the following order :-

On predication	Natiare of <b>predication</b> ,...Article one.
	in signified act inodes of predication 'per se'..., — Article two.

## ARTICLE ONE.

## NATURE OF PREDICATION

226. TRUE AND FALSE CONJUNCTION OF EXTREMES: Let us take these two propositions: 'A rabbit is an animal\*', and 'A rabbit is a plant\*.

A. The former proposition is true:

- a. because P (animal) agrees with S (rabbit)
- b. that is, is identified with it in thing (in the real).

B. On the other hand, the latter proposition is false:

- a. because P (plant) does not agree with S (rabbit),
- b. that is, P is not identified with S in thing (in the real).

227. NECESSITY FOR RULES OF PREDICATION: It follows:

A. That true conjunction of extremes is subjected to certain rules.

B. These rules are called the i-ules of predication.

228. DEFINITION AND SPECIES OF PREDICATION: Now:

A. PREDICATION is:

- a. an enunciation whereby to a subject is attributed a universal predicate,
- ~b. or the conjunction of extremes based on agreement or identity of subject and predicate.

3. But the identity, whereof it is question here, must be rightly understood: in the true proposition 'a rabbit is an animal', there is indeed identity of thing.

a. For animal, as a superior concept, is identified in thing with rabbit. (n.106).

al. Nevertheless 'animal' and 'rabbit' are distinguished conceptually (nn.108-112):

a2. for not the same objective concept is expressed by 'animal' and by 'rabbit'.

b. Therefore between 'animal' and 'rabbit':

b1. there is:

b1a. only MATERIAL IDENTITY or IDENTITY OF THING,

b1b. but not FORMAL identity or identity of OBJECTIVE CONCEPT.

b2. In which case the predication is called FORMAL PREDICATION or predication BASED ON MATERIAL IDENTITY.

b3. But if we take these examples: 'a canal is a channel', 'movement is movement'; 'liberty is freedom':

b3a. in which S and P are identical:

b3a1. not only in thing or MATERIALLY,

b3a2. but also as regards objective concepts or FORMALLY.

b3b. Then the predication is called IDENTICAL or TAUTOLOGICAL.

C. But let us further consider formal predication: let us take this proposition: 'Bernborough is a horse'. By the conversion, of this proposition we can get this: 'some horse is Bernborough\*.

a. These two propositions differ in this, that:

al. in the former, a superior concept (horse) is predicated of an inferior (Bernborough);

whereas in the latter, on the contrary, an inferior is predicated of a superior.

b. But since S, in every proposition, has itself relatively to P as determinable to determinant, from itself it is inferior; but P superior.

b1. But in the proposition 'some horse is Bernborough', wherein the contrary is the case, the predication is called INVERSE PREDICATION, which is predication IN WHICH AN INFERIOR IS PREDICATED OF A SUPERIOR.

'b2. But in the other proposition 'Bernborough is a horse', wherein a superior is predicated of an inferior, the predication is called DIKBCT PREDICATION, which is predication .IN WHICH A SUPERIOR IS PREDICATIIL^ Alf INFERIOR.

D. Further:

a. In the proposition 'Bernborough is a horse\*', in v/hich a superior P agrees with an inferior S, by reason of the ESSENCE of the subject, the predication is called ESSEICTIAL PREDICATION or PREDICATION NRSR SE'

b. But in the proposition 'Bernborough is healthy\* :

b1. in which P agrees with S;

bla. not indeed by reason of the essence of the subject,

bib. b'ut""3Y REASON \5f' S0]\CB[ffIIN5~TOICT!"TS ACCIDENTAL TO THE SUBJECT,

b2. the predication""is called ACCIDENTAL PREDICATION"or PREDICATION 'PER ACCIDENS' .

c. This distinction between predication 'per se' and predication 'per accidens' is OF THE HIGHEST D.gORTANCE for demonstration:

c1. which must, as will be seen latei':

cla. beget science, i.e. certain knowledge,

clb. and therefore must proceed from necessary premisses.

c2. For which reason we shall speak at more length in the follov/ing article about essential predication or predication 'per se\*.

E. Accordingly, the division of predication may be thus exhibited schematically

either identical.

Predication is	either INDIRECT.
[or formal:	
[v/hich is	"either 'PER ACCIDENS'.
	or DIRECT:
	which is
	“ or 'PER SE'.

ARTICLE T^70,

MODES OF PREDICATBTG 'PER SE' OR OF ESSrJU?IAL PREDICATION.

229. MEANING OF THE WORD "PER SE' : Something must first be said about the meaning of the word 'per se'.

A. IN CONCEPTS:

a. 'PER SB^ signifies, the same as SE\* (iN SELF) :

b. and the tv/o are used promiscuously for defining substance (v/hich is defined \*ens cui competit esse in se vel per se^ - being whereto befits be in self or through self).

c. Therefore it is distinguished against 'in alio' (in other) or accident (which is defined 'ens cui competit esse in alio' - being whereto befits be in other).

d. It is not with this acceptance of the word 'per se' that we are concerned here.

3. But here we are concerned with the acceptance which 'PER SE\* has IN PROPOSITIONS,

a. In this acceptance it is disting'oished against 'PER ACCIDENS\* or CONTINGENTLY;

b. and thus taken 'PER SE\* signifies NECESSARILY.

230. THE MODES OP PREDICATIirc- 'PER SE' : These are expounded by St Thoiras in his Comriientary on the First Book of the Post. Analytics (lect.10).

A. Let us begin with these examples;

- 'Man is a rational animal'.
- \* 'Kan is an animal'.
- 'Man is rational'.
- h. 'Kan is I'isible'.
- e. \*iln isoceles has three angles equal to two right angles'.
- 'A sculptor ro.akes a statue'.

B. Now:

- a. Of these examples;
  - al. in the first three, P is the DEFINITION or PART OF THE DEFINITION of the subject.
  - a2. in the fourth and fifth, P is a PROPERTY of the subject.
  - a3. in the last, P'Ts the~ PROPER act of the subject.
- b. viherefrom it appears that there are three modes of PREDICATING--'PER SE'.
  - b1. The first mode of predicating 'per se' is when the predicate is the DEFINITION or PART OF THE DEFINITION OF THE SUBJECT.
  - '~b2. The "second" mode of "predicating 'per se' is when the predicate is a PROPERTY OF THE SUBJECT^
  - b3. The third mode of predicating 'per se' is when 'the predicate expresses the PROPER ACT or PROPER EFFICIENT CAUSALITY OF THE SUBJECT
  - b3a. Note here that we say 'PROPER', i.e. inasmuch as such;
    - b3a1. thus a sculptor, inasmuch as he is a sculptor, makes a statue; for the making of statues is the proper act or proper efficient causality of sculptor;
    - b3b. but not to this mode of predicating pertains this: 'the sculptor sings a song':
      - b3b1. for not inasmuch as he is a sculptor does he sing a song;
      - b3b2. but then is had predication 'per accidens'.

C. Let us now convert these propositions, excepting the last, paying attention to the matter, not only to the form, of the propositions.

a. We get these:

al. From those of the first mode;

- ala. 'Every rational animal is a man'.
- alb. 'SOME animal is rational'.
- ale. 'Every rational animal is man'.

a2. From those of the second mode;

- a2a. 'Every risible (being) is a man'.
- a2b. 'SOME triangle having three angles equal to two right angles is isoceles'.

b. One proposition (to wit, the second) of each mode had to be converted ACCIDENTALLY, but the others were converted SIMPLY (nn. 222-223).

b1. Now:

b1a. those which were converted simply are called CONVERTIBLE propositions;

b1b. while those which were converted accidentally are called NON-CONVERTIBLE propositions.

b2. The reason of the non-convertibility is because:

- b2a. in the first mode, P is the generic part of the subject,
- b2b. and in the second mode, P is a property flowing from the genus of the subject.

c. Therefore, in each of these two modes:

c1. are to be distinguished:

- c1a. a mode of predicating 'per se' PRIMARILY ('per se primo' - essentially and primarily), which is also called predication 'according to that which it is' - secundum quod J. p. sijm);
- c1b. 'and' a mode of "predicating 'per se' SECONDARILY ('per se secundo' - essentially but secondarily),
- c2. according as the propositions are convertible or non-convertible.

c3. 'iThich may "be thus shown schematically

'Man is a rational animal'...  
PRIIVARILy  
'Man is rational'. in the FIRST  
Mo;^ of.".'..  
  
'Man is an animal'. SECONDARILI  
predicating  
'PER SE'.  
  
'Man is risible.PRBLARILY  
' in the SEC9m)  
'An isoceles has three angles MODE of.....  
equal to two right angles'... SECONHEARILY \_

D. Accordingly the modes of predicating 'per se' or essentially or necessarily may be thus exhibited schematically

either CONVERTIBLE: and then  
is had predication 'PER SE'  
PRIMARILY in the first mode  
of predicating 'per se'.  
  
either ACCORDmG AS P IS THE  
DEFINITION OR PART OP THE  
definition' of sT ail'd""Thin i s  
had THE FIRST MODE of {iredi-  
cation 'per se'; but then  
the proposition may be  
  
or NON-CONVIR.TI3LE: and then  
is had predication 'PER SE'  
SECONDARILY in the first mode  
of predicat5.ng 'ptsr se'.  
  
Essential  
predication  
or predication  
'per se' or  
predication  
necessarily is  
had ACCORDING  
AS a' SUPFEIOR  
P AGREES Wm or ACCORD'ING AS P IS A  
'm inferior's PROPERTf OF S; and then is  
BY REASON OF had THE SECOND MODE of pre-  
THE ESSENCE dicating 'per se'; but then  
OF sT and the proposition may be  
this may be  
  
either CQI^rVERTIBLE; and then  
is had predication 'PER SE'  
PRE^IARILY in the second mode  
of predicating 'per se'.  
  
or NON-CONVERTIBLE: and then  
is had predication 'HER SE\*  
SECONDAMLY in the second mode  
of t:ir'edicating 'per se'.  
  
or ACCORDING AS P EXPRESSES TIE PROPER ACT OR PROHIR  
EFT'ICIErTO CAUSALITY OF S; and then is had THE'tHEiS~MODS  
of predicating 'per se'.

231. VALUE OP THE DISTINCTION OP 'HiESE MODES: It is to be noted that:

- A. The distinction of these modes of predicating 'per se' or necessarily:
- a. has not been invented for the purpose of vain subtletiesj
  - b. but "in order that accurate speech be employed in sciences: and how much this contributes to the clarity of ideas and to the attainment of truth, no one is unaware."

3. In justification of this assertion, consider the following example from St Thomaas:

a. In the second book 'Contra Gentes' (ch.15), St Thomas lays down this thesis; "All things which are in any way at all, are from God.

h. For the proof of which he advances first this most profound reason:

hi. "Everything which depends on something not according to that by which it is (non secundum quod ipsum est), depends on it through some cause, as white depends on a man.

hla. "For that which has not a cause, is first and immediate,

hlh. "Wherefore it must needs be that it be 'per se' and according to that which it is (secundum quod ipsum).

h2. "But it is impossible that some one depend on two and each of them according to that by which it is (secundum quod ipsum).

h2a. "For that which is said of something according to that which it is (secundum quod ipsum), does not exceed (go beyond it: as to have three angles equal to two right angles does not exceed triangle, of which it is predicated, but is to it convertibly.

h2h. "Accordingly, if something were to depend on two, it does not depend on each of them according to that which each is (secundum quod ipsum est).

h2c. "It is impossible accordingly that some one be predicated of two, so as to be said of neither by reason of a cause; but it must needs be;

h2cl. "either that one is the cause of, the other (as fire is the cause of the heat in a mixed body, while nevertheless each is called hot),

h2c2, "or it must needs be that some third be the cause to each of the two (as a fire is to two candles the cause of their being alight).

h3. "But he is said of everything which is.

h4. "Accordingly it is impossible that there be some two, neither of which would have a cause of be: but it must needs be:

h4a. "that both the two in question be through a cause,

h4h. "or that one be to the other the cause of be.

h5. "Therefore it is necessary that from, that, to which no thing is a cause of be, be everything which is in any way at all.

h6. "But we have shown above (3d. I, c.13) that God is such a being, to which no thing is the cause of be.

h7. "From him accordingly is everything which is in any way at all." (Con. G-ent. II, c.15).

252. MANNER OF SPEAKING OF THE ANCIENT SCHOLASTICS; It is to be noted:

A. That the ancient Scholastics, following St Thomas (in Post. Anal., lect.10, n.6), speak;

a. not of modes of predicating 'per se',

h. but of modes of saying 'per se'.

B. And they distinguish four modes:

a. Among which they assign as the THIRD MODE OF SAYING 'PER SE' :

al. not a mode of predicating,

a2. but a mode of existing; namely, a mode signifying that something is in self and not in another as in a subject,

h. And the fourth place they assign to the third mode of predicating 'per se', or the mode of predicating according to proper efficient causality.

G. This comparison of the two ways of speaking will appear from the following scheme:-



	is the definition of S.			
	PRsfAHILY: when P	is the specific difference of S.		
			which	PmT
	SECONDARILY: when P is the genus of S.			
There are three inodes of predicating ^ peF~se''7*^o wit;	[primarily : when P is a property flowing from the specific difference of S		corres- ponds to the	mode of smJng 'per se',
	SEGOFDAEILY: when P is a property flowing from the genus of S.	which	SECOND	
				raiED.
	THIRD: when P expresses the proper efficient causality of S	which	FOURTH	

CHAPTER NINETEEN.

PREDICATION IN EXERCISED ACT.

253. ORDER OF PROCEDURE: It is question here of the APPLICATION. ACCORDING TO THE DIVERSITY OF MATTER, of what has been said in the previous chapter about the predication taken in the abstract or in signified act. (Cf, John of St Thomas: Cursus Phil, I, pp,564ss}. Accordingly:
- A. Certain pre-ambles will first be recalled, (n.234).
  - B. Thereafter:
    - a. First, will be treated predication of a concrete about a concrete. (n.235).
    - b. Secondly, will be treated inredication of an abstract about an abstract. ~(n.236).
    - thirdly, will be treated predication of a concrete about an abstract, and vice versa (n.237).

254, **PRE-AMBLES:** It must first be recalled that:

A. An ABSTRACT GQHCPT is that 'Whereby an essence is abstracted from the subject having it (n.49).

a. Thus:

a1. 'humanity' is the essence or nature whereby a subject is man;

a2. 'corporeity' is the essence or nature whereby a subject is a body.

b. This concept is as it were a  $p^t$  with respect to the concrete universal.

c. It arises by formal abstraction. (Cf. n.29).

B. A CONCRETE CONCEPT:

a. which arises by total abstraction (cf. n.29), whereby a superior universal (v.g. animal) abstracts from (and accordingly contains in potency) inferiors (v.g. from man, from Peter),

b. is with respect to its inferiors a potential whole. (Cf. n.121).

c. Hence a superior and inferior concrete contain the same whole:

c1. but the superior indeed contains it indeterminately,

c2. whereas the inferior contains it determinately.

255. **PREDICATION OF CONCRETE ABOUT CONCRETE:** Regarding predication of a concrete about a concrete, a superior P is rightly predicated about an inferior S.

A. In SUBSTANTIAL concepts there is no difficulty. Thus 'man' is rightly predicated about 'Peter', because they signify the same whole.

3. In ACCIDENTAL also it is clear: thus in the propositions 'The white is coloured', and 'Peter is small', predication is rightly made.

a. An accidental concrete (v.g. 'white', 'coloured', 'small'):

a1. signifies directly (in itself) the verbal form of the accident

(v.g. whiteness, colour, smallness),

a2. but connotes obliquely (in oblique) a subject of inhesion (n.49,C).

b. Therefore:

b1. 'the identity of S and 'man' be an identity of form: colour is a genus, whiteness a species: hence these concepts can be predicated one of the other, as a superior of an inferior.

b2. but in the other example 'Peter is small';

b2a. there is:

b2a1. not identity of form,

b2a2. but identity of subject of inhesion;

b2b. therefore 'small' is rightly predicated of 'Peter'.

c. Note however that:

c1. the former predication, to wit, 'coloured' of 'white', is essential or 'per se',

c2. "whereas the latter, to wit, 'small' of 'Peter', is accidental or 'per accidens' (n.228, D).

256. **PREDICATION OF ABSTRACT ABOUT ABSTRACT:** Regarding predication of an abstract about an abstract, a superior P is rightly predicated of an inferior S.

A. In ACCIDENTALS (v.g. 'whiteness is a quality').

a. There is no difference between:

a1. predication of abstract about abstract in accidentals,

a2. and predication of concrete about concrete in substantials.

b. For the abstract of an accident is in a certain way some whole not having its termination save in a concrete substance.

3. In SUBSTANTIALS (v.g. 'humanity is animality'), the predication has two significations:

a. either the inferior ('humanity') is taken reduplicatively (cf. n.207, D):

a1. then the meaning is 'humanity inasmuch as it is humanity is animality';

a2. and then the predication is not rightly made, because by reason of the reduplication the subject ('humanity') is taken as signifying:

a2a. not humanity subsisting,

a2b. but only the specificative difference of the nature: v/hich is excluded from the predicate ('animality\*).

b. Or;

b1. the subject is taken:

bla. not reduplicatively,

bib. but specifically;

b2. then the meaning is: 'humanity is animality' (determined indeed by rationality), which is equivalent to this: 'to be a man is to be an animal indeed a rational animal^

b2a.~ and then the predication is valid, because there is had in P a potential whole whereof S is the actual whole.

237. PREDICATION OF CONCESSION ABOUT A3STRAGT OR VICE VERSA: It is enough to note here the following:

A. GESSIERALLY:

not rightly is predication made:

a1. either of a concrete about an abstract,

a2. or of an abstract about a concrete;

b. because they are to each other as part and whole; which are not identified.

B. But there are these BXGEPRIONS :

a. When predication is made in divine things;

a1. in which the same is the abstract and the concrete: (God is divinity).

a2.'because in God there is no composition, not even metaphysical.

b. When predication is made in transcendentals (being, one, true, good) :

b1. because the same are:

bla. being (concrete) and entity (abstract),

bib. one (concrete) and unity (abstract),

blc. true (concrete) and truth (abstract),

bid. good (concrete) and goodness (abstract);

b2. for the transcendental properties are identified with being itself, or with entity itself;

b3. but being c-m add to entity nothing which would not be entity.

c. When predication is made in quantity (v.g. 'quantity is quantic', 'extension is extended', 'number is numerosity', 'numerosity is number', 'inch-length is an inch-long\*):

c1. for quantity, even separated from a subject which by it becomes quantic, has parts;

c2. but what has parts is said to be extended and quantic.

BOOK THREE.

THIED PART OP LOGIC: ON ILLATION.

238, CONNEXION WITH PRECEDING PART; Just as predicability is ordered towards predication, so predication is ordered towards illation.

A. Pot, as is explained in psychology, the human intellect, on account of its imperfection, requires, for the obtaining of perfect knowledge of things;

- a. not Only predication,
- b. but also illation or inference.

B. And therefore, after the study of predication, occurs the study of illation.

239, GENERAL VIEW OP THIS PART; However, since illation is made in reasoning;

A. Before approaching illation itself, certain things must be tyemised. in a PIRST SECTION, regarding;

- a., reasoning, as it is an act of reason; for thus is it the cause of illation;
- b. reasoning, as it is the work of this act: vihioh must be considered:
  - b1, both in itself.
  - b2. and in its sign, which is argumentation.

B, Thereafter illation itself will be considered: but illation can be considered in two ways, to wit:

- a. Both formally or according as it is the very form of reasoning:
  - a1. and thus, since it is diverse accoipling to the diverse species of reasoning,
  - a2. it will be considered:
    - a2a. in a SECOND SECTION, as it is the form of deductive reasoning;
    - a2b. and in a THIRD SECTION, as it is the form of inductive reasoning.

and materially or in its application to diverse matters;

b1, vdiich is the consideration of reasoning as it is proof, which regards not only the form of reasoning, but also its matter.

b2. But, since reasoning as it is proof or argument, is reduced to three genera, to wit, to sophistic proof, to probable proof, and to certain or scientific proof, yAiich is called demonstration.

b2a. In a POURTH SECTION will be considered sophistic proof.

b2b. And in a PIPTH SECTION will be considered probable proof.

b2c. And thereafter will be treated certain or sciaitific proof or demonstration: but since the consideration of this is threefold;

b2c1. In a SIXTH SECTION will be considered scientific or certain proof or demonstration in itself.

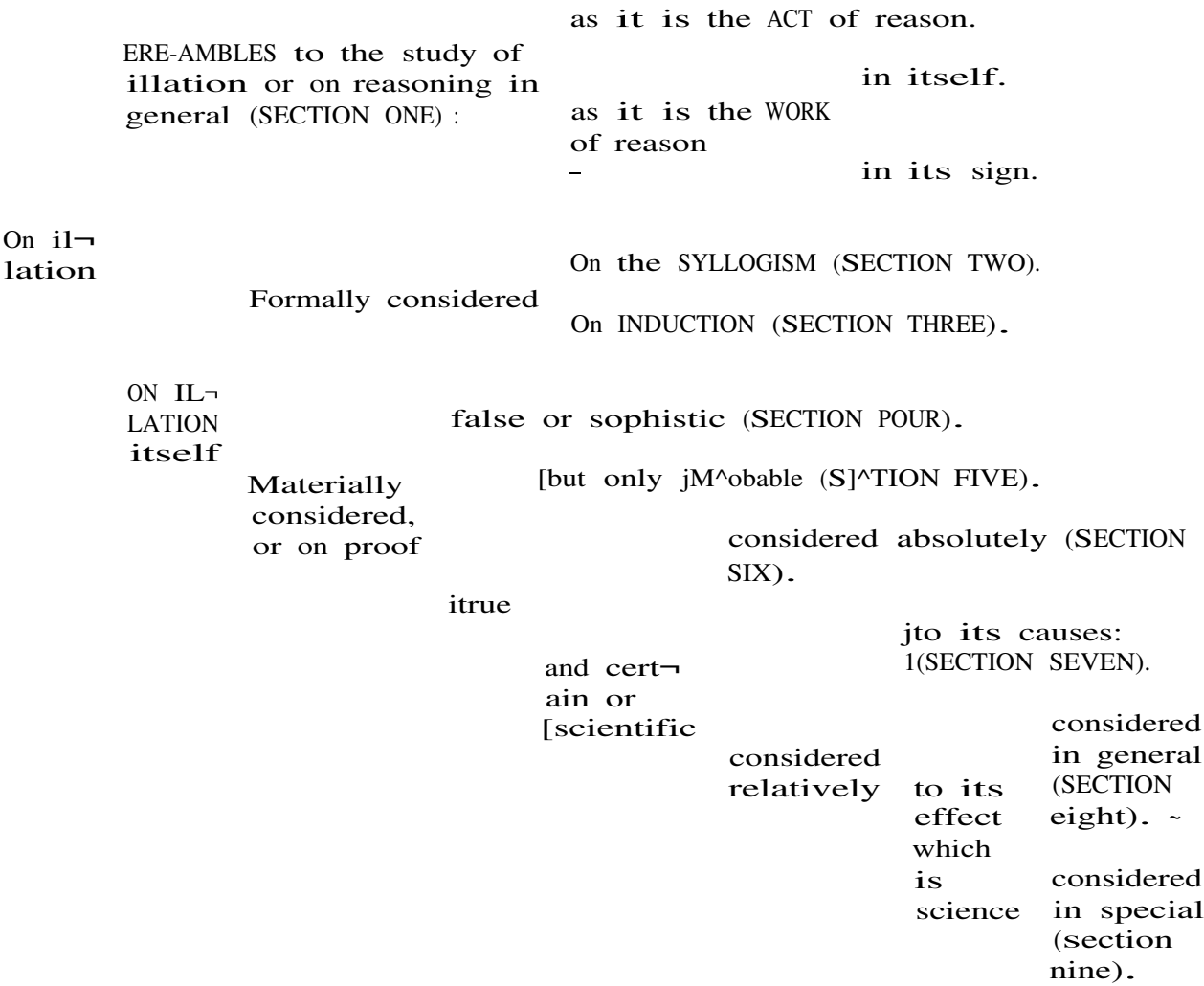
b2c2. In a SEVENI'H SECTION will be considered scientific or certain proof or demonstration in its preparation, vdiioh prepatration is the discovery of principles.

b2c3. And thereafter will be considered scientific or demonstration in its effect, which effect is science: but since the consideration of science is twofold:

b2c3a. In an EIGHTH SECTION will be considered science in general.

b2c3b. And in a NINTH SECTION will be considered the sciences in special.

C. YThich may be thus exhibited schematically



section one.

ERE-AMBLES TO THE STUDY OF ILLATION

OR

ON REASONING WHICH IS THE CAUSE OP ILLATION, AND ITS WORK.

240. ORDER OP PROCEDURE; Illation is found in reasonings

A. But reasoning can be considered in two ways, to wit;

a. PSYCHICALLY indeed, inasmuch as it is the ACT of reason:

a1. Thus tadcen, it is the CAUSE of illation;

a2. but thus taken;

a2a. it pertains more to psychology;

a2b. for which reason, it will be treated briefly here.

- b. And LOGICALLY, inasmuch as it is the WORK of the third operation of the intellect (nn.M, 17, 19). But thus taken, it can be considered
  - b1. either in itself,
  - b2. or in its sign, -wrfiich is argumentation.

B. Accordingly, here we shall consider:

- First, the nature of reasoning as it is the ACT of reason,
- b. Secondly, reasoning as it is the Tfork of the intellect, or taken logically; and indeed:
  - b1. In the first place, in itself;
  - b2. In the second place, in its sign.

C. Hence the following order

On reasoning which is the ACT of reason, and its WORK:	[as it is the ACT of reason,.	Chapter twenty.
	in itself.	Chapter twenty-one
	!As it is the intellect's WORK in its sign.	Chapter twenty-two

CHAPTER TWENTY.

NATURE OP REASONING AS IT IS THE ACT OP REASON.

241. THE NATURE OP REASONING: Let us take:

A. This example:

'Every man is mortal.  
'But Peter is a man.  
'Therefore Peter is mortal'.

B. In this case:

- a. there is:
  - a1. not merely the emission of three judgments successively, as if they had no connexion betv/een them,
  - a2. but the mind proceeds from one to another to obtain the truth ('Peter is mortal'), which was VIRTUALLY contained in the first judgment ('every man is mortal').
- b. This passage is effected by the aid of the second judgment.

C. Therefore:

- a. It is not sufficient for reasoning;
  - a1. that one thing or one truth be known AFTER another;
  - a2. nor that one thing or one truth be known IN another (v.g. as an effect in its cause),
- b. but it is required that PROM the knowledge of one the mind proceed to the knowledge of the other.
- c. Therefore:
  - c1. an intellect which understands comprehensively (n.51, P), to wit, the divine intellect and the angelic intellect, understands not discursively or ratiocinatively;
  - c2. but to be rational or to reason is proper to man.

D. This ACT WHEREBY INTELLECT PROCEEDS FROM ONE OBJECT UNDERSTOOD TO ANOTHER TO KNOW AN INTELLIGIBLE TRUTH is'RMSONING (1. q.79. a.sj.

E. Therefore psychically considered, reasoning is a simple act of the mind, concluding the consequent from the antecedent, wherein it is VIRTUALLY contained.

P. In the example given, the consequent is the judgment 'Peter is mortal\*', considered:

a. **not in itself.**

IN. Its "Elation with the preceding judgments whereof it is the effect; - which indeed is indicated by the very name 'consec<sup>uent</sup>'.

G. But the antecedent is the second judgment ('Peter is a man\*'), tak<sup>^</sup> indeed, not in itself, but IPIDER THE LIGHT OF THE FIRST .TTTTij>ilTi'.M' (or, as is said, taken as subsumed to the first judgment).

a. Therefore both the first and second judgments, which are the causes of the consequent, belong to the antecedent:

b. But indeed:

bl. The first as a REMOTE cause:

bla. inasmuch as it contains in itself:

blal. but indeterminately - as a species indeterminately contains the individuals beneath it,

bla2. and as determinable.

bib. the truth which is determinately contained in the consequent.

b2. But the second as a PROXIMATE cause, inasmuch as it determines the truth to be broiaght forth in the consequent.

242. TRANSIT TO A TRUTH FORMALLY DIVERSE: But because the truth contained in the consequent, is found indeterminately in the first judgment of the antecedent, it is said to be VIRTUALLY contained in it. V/herefTom it appears that:

A. The mind, by means of reasoning, progresses in the knowing of trtith, inasimxch as it passes:

a. from a virtual truth,

b. to a truth:

bl. materially the same,

b2. but formally (i.e. determinately) DIVERSE;

3. Or - wliat is the same - passes:

a. from truth formally known ('every man is mortal\*').

ANOTHER truth formally known ('Peter is mortal'I.

243. NO IMMEDIATE INFERENCE PROPERLY SO-CALTIED: It follows from what has been said that THERE IS NO IMMEDIATE INFERENCE OR IMMEDIATE ILLATION properly so-called. (Cf. n.221, D).

A. For illation or inference properly so-called essentially requires that the mind progresses TO ANOTHER TRUTH, to wit. to a truth FORMALTY DIVERSE.

B. Therefore it does not suffice for the essence of inference properly so-called that the mind pass TO ANOTHER PROPOSITION EXPRESSING THE SAME TRUTH.

a. And indeed it is to be observed that:

3-1. ANOTHER PROPOSITION is had if only the concepts or terms contained in the proposition are otherwise disposed, or are made different according to implicit and explicit.

a2. But ANOTHER TRUTH is had ONLY IF it is ANOTHER TpENTITY which is affirmed (or denied), to wit, an identity between concepts distinct by a distinction greater than that which lies between the implicit aind the explicit, as explained above (n.214).

b. For by illation the mind:

bl. PROGRESSED or ADVANCES (i.e. acquires FURTHER TRUTH, i.e. ANOTHER TRUTH).

b2. and does not, so to speak, merely step sideways, diversely knowing THE SAME TRUTH.

c. Which TWO MOVEi\CBNTS of the mind may be illustrated:

cl. from these two examples:

cla\*                    'The SPIRITUAL is immortal.  
But the soul of man is spiritual.  
Therefore THE SOUL OF tIAN is immortal'.

- clb. 'Every man IS an animal.  
Therefore some animal IS a man'.

c2. In the former example the mind ADVANCES to a NEff TRUTH; for when it knew 'the spiritual is immortal', it was knowing only\_ the IDENTITY between 'the spiritual' and 'immortal';

c2a. and was not knowing:

G2a1. either the identity between 'the soul of man' and 'spiritual',

c2a2. or the identity between 'the soul of man' and 'immortal'.

c2b. and indeed the mind may have been still ignorant:

c2b1. not only of the identity between 'the soul of man' and 'immortal',

c2b2. but even of the identity between 'the soul of man' and 'spiritual'.

c5. But in the latter example the mind merely STEPS SIDWAYS, so to speak, to ANOTHER KNOWING of the SAME TRUTH:

c3a. For WHAT IT KNEW when it knew 'every man is an animal' was the IDENTITY between these two: 'man' and 'some animal' (of n.71. B.a).

c3b. and Y/HAT IT KNOWS when it knows 'Some animal is man' is the SAME IDENTITY, i.e. the identity between the SAME TWO.

C. Accordingly care is to be taken not to be deceived by the use of the word 'therefore' and similar words:

a. For sometimes such words signify inference properly so-called,

b. but sometimes not, - for sometimes they signify only that some proposition expresses a truth, then ANOTHER PROPOSITION also expresses a truth, (BUT INDEED THE SAME TRUTH).

D. From the above, it is easily seen that the opinion of those modern writers who assert that CONVERSION and OBVERSION. are IMMEDIATE inferences, is to be rejected, as said above (n.221, b).

E. However:

reasoning (inference) it may be verified that the change in the logical structure of a proposition by conversion or obversion does not affect the truth of the proposition.

b. Thus is this verified with regard to the second example above given (B.clb):

'That which is predicated, according to some of its inferiors,  
of every man, is identical, according to some of its  
inferiors, with man.

But 'animal' is predicated according to some of its inferiors,  
of every man.

Therefore 'animal', according to some of its inferiors, is  
identical with man.

P. It may indeed be conceded that the name 'inference' may be taken in a broad sense to signify:

a. "every passage from one proposition to a second proposition which is necessarily true if the first is true (even if these two propositions do nothing but state the same truth". (Maritain: Introduction to Logic, p.169); or, in other words, every passage which may be designated by such a word as 'therefore'.

b. And indeed "such is the traditional use made of this word by the ancients in their treatises 'de consequentiis'." (Maritain: ibid.)

c. But then the name 'inference' is taken improperly.



CHAPTER TITOTY-ONE.

REASONING AS IT IS A WORK OF THE INTELLECT.

244. ORDER OF PROCEDURE; The treatment of reasoning as it is the intellect's WORK considered in itself:

A. Considers:

a. **First**, the nature of reasoning as it is the work of the intellect, or logically viewed.

Secondly, the laws of reasoning as they bespeak the exigencies of its nature.

B. Hence the following order :-

Reasoning logically considered	on its nature	Article one.
	on its laws	Article two.

ARTICLE ONE.

NATURE OF REASONING LOGICALLY CONSIDERED.

245. THE MATTER OF REASONING: Under this logical aspect reasoning is a complex **artificial** work or construct in which diverse things are to be distinguished, to wit:

A. Three judgments ('every man is mortal', 'Peter is a man', 'Peter is mortal') :

- a. whereof:
  - a1. the first two are called the premisses,
  - a2. but the third the conclusion.
- b. These judgments constitute the PROXIMATE matter of the reasoning.

B. But:

- a. These judgments consist of concepts (terms), but not of any concepts at random.
  - a1. In the example given, are found three concepts only, each of them occurring twice.
  - a2. These are the REMOTE matter of the reasoning.
- b. With regard to these concepts:
  - b1. observe that:
    - b1a. two of them are found, each once in the premisses and once in the conclusion;
    - b1b. whereas the third is found twice in the premisses.
  - b2. Whereas:
    - b2a. the former are called the extremes, (or S and P),
    - b2b. the third (i.e. that which is found twice in the premisses) is called the medium-concept or middle term, or simply, the medium (m) : for it is by the medium of it that the extremes are compared with each other.
  - b3. Thus, in the example given:
    - b3a. 'mortal' and 'Peter' are each compared with 'man'.
    - b3b. and by the medium of 'man' with each other.
- c. But:
  - c1. since in every Judgment:
    - ca. S is the MINOR concept, because it is subject to P,
    - clb. wherefore P is called the MAJOR concept;
  - c2. therefore:
    - c2a. the S of the conclusion is called the MINOR extreme.

- c2ld. and the P of the conclusion is called the MAJOR extreme,
- d. From these two the premisses get their name;
- d1. The MAJOR premiss is the PREMISS WHICH CONTAINS THE MAJOR EXTREME,
- i.e. P of the conclusion.
- d2. The MINOR premiss is the PREMISS WHICH CONTAINS THE MINOR EXTREME,
- i.e. S of the conclusion.

246. THE FORM OF REASONING: THE ARTIFICIAL DISPOSITION OF CONCEPTS FOR THE MANIFESTING OF THE ILLATIVE CONNEXION OR CONSEQUENCE, that is\* THE SEQUENCING OF THE CONSEQUENT FROM THE ANTECEDENT according to CAUSALITY and not only according to SUCCESSION, is the FORM of the reasoning.

- A. In the example given above;
  - a. the consequent flows from the antecedent:
    - a1. according to a right disposition of concepts,
    - a2. and by reason of the matter of the concepts.
  - b. And therefore the consequence is said to be good:
    - b1. MATERIALLY.
    - b2. and FORMALLY.

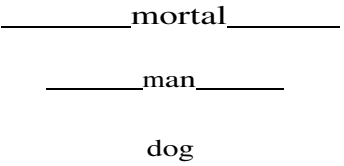
B. But it is otherwise in the following:

a. Examples:

- a1. 'Every man is mortal.  
But this dog is a man.  
Therefore this dog is mortal'.
- a2. 'Every man is mortal.  
But a dog is not a man.  
'Therefore a dog is not mortal'
- a3. 'Some man is wise.  
But Peter is a man.  
Therefore Peter is wise\*.

b. In the first of these reasonings:

- b1. The consequence is formally good, because the concepts are so disposed, that the minor extreme is under M, and M is under the major extreme
- b1a. thus:-



- b1b. Therefore, if attention be paid only to the disposition of the concepts, 'mortal' is RIGIDLY predicated of 'dog'.
- b2. But MATERIALLY, or paying attention to the matter of the reasoning, the consequence is bad.
  - b2a. Note that we say 'bad', not 'false':
  - b2b. for the conclusion is true, not indeed by virtue of the consequence but accidentally (per accidens): for one premiss is false.

c. In the second example, the consequence neither formally, nor materially, is good:

- c1. Not materially, as is clear.
- c2. Nor formally:
  - c2a. because, paying attention only to the disposition of the concepts, it is illegitimately concluded 'a dog is not mortal':
  - c2b. for: ~
  - c2b1. P is universal in this conclusion (cf. n.71, B.b),
  - c2b2. whereas in the Major premiss it is only particular.

d. In the third example:

- d1. The consequence is materially good, but formally bad:
  - d1a. Materially good indeed, for the premisses are true.
  - d1b. But formally bad, because M is in each premiss particular, for which reason it does not necessarily signify the same part of the universe!:

dlb1. thus;-

wise

some myi

some man

Peter

dlb2. In which case, there is no illation:

dlb2a. because, in default of a right disposition of concepts in the premisses, there is no antecedent;

dlb2b. for the antecedent is the minor taken under the light of the major: which presupposes a right disposition of concepts.

## ARTICLE TWO.

### THE LAIS OP REASONING.

247. **T**NO LAIS: Prom what has been said, two laws follow.

248. **F**IRST LAW; The first law is this: PROM AN ANTECEDENT,  
A CONSEQUENT: YET PROM A FALSE ANTECEDENT.  
CONSBQUEIT. BUT ACCIDENTALLY.

A. The first part (From an antecedent, always follows a consequent) is clear from the nature of an antecedent.

B. The second part however is evident:

a. That from a false antecedent may follow a true consequent, is clear from the first example given above (n.246, B.alJ.

b. But that this occurs accidentally (per accidens) only, is proved from this:

bl. that:

bla. the consequent is the effect of the antecedent;

bib. but an effect follows necessarily the nature of its cause;

blc. therefore from a false antecedent only a false consequent can follow 'per se' or necessarily.

b2. Therefore a true consequent cannot follow unless owing to the intervention of a cause extraneous to the falsity of the antecedent, to wit, owing to the artificial disposition of the concepts,

b3. Therefore the true consequent follows:

b3a. from the ANTECEDENT indeed,

b5b. but not from the falsity thereof.

249. **S**ECOND LAW: The second law is this: THE CONCLUSION ALWAYS FOLLOWS THE WORSE PART.

A. The 'worse part' is to be understood thus:

^ negative proposition is called worse than an affirmative,

b. A particular proposition is called worse than a universal.

B. Therefore:

a. The meaning is;

a1. From a negative antecedent always follows a negative conclusion.

a2. From a particular antecedent always follows a particular conclusion.

b. Which is illustrated from these examples;

bl. 'An animal is sentient.... AFFIRMATIVE,  
But a sunflower is NOT sentient. **NEGATIVE**-  
'Therefore a sunflower is NOT an animal' — NEGATIVE.

- b2. 'A sense is NOT cognoscitive of universals.....NEGATIVE.  
But intellect is cognoscitive of universals — AFFIRMATIVE,  
Therefore intellect is NOT a sense\*.NEGATIVE.
- b3. \*Every man is endowed with intellect — UNIVERSAL.  
But SOME biped is a man.... — '...PARTICULAR.  
Therefore 'SOME biped is endowed with intellect'. PARTICULAR.
- b4. 'Every man is endowed with intellect — . UNIVERSAL.  
But SOME biped is not endowed with intellect — PARTICULAR.  
Therefore SOME biped is not a man..\*...PARTICULAR.

C. This law is EVIDENT;

a. AS REGARDS A NEGATIVE ANTECEDENT:

al. For:

ala. A negative antecedent signifies:

alal. either that the minor extreme does not agree with the middle-term  
(as in the first example above given)^

ala2. or that the middle-term does not agree with the major extreme  
(as in the second example above given).

alb. Therefore it follows that the minor extreme does not agree with  
the major extreme.

a2. Which may be illustrated thus in a mathematical manner

If	$c = B$	But if	$C = B$	Or if	$C = B$
and	$A = C$	but	$A = C$	but	$A \neq C$
Then	$A = B$ .	Then	$A \neq B$ .	Then	$A = B$

b. AS REGARDS A PARTICULAR ANTECEDENT:

bl. For a particular antecedent signifies that part only of the minor  
extreme agrees (as in the third example above given)~or agrees not (as in  
the fourth example above given), with M.

b2. Therefore part only of the minor extreme can agree (as in the  
third example), or agree not (as in the fourth example), with the major extreme

## CHAPTER TWENTY-TWO.

### THE LOGIC OF REASONING OR ARGUMENTATION.

250. NOTION OF ARGUMENTATION: From what has been said, it is clear that  
the SIGN of a reasoning, which is called ARGUMENTATION is: A SPEECH  
SIGNIFYING THE SEQUENCE OF ONE FROM ANOTHER — "ORATIO SEQUENTIALI UNUS EX  
ALIO SIGNIFICANS". Nor does this require any further explanation.

251. TWOFOLD ARGUMENTATION: But argumentation or the sign of a reasoning  
is twofold, to wit:

A. DEDUCTIVE ARGUMENTATION or SYLLOGISM, (which will be dealt with  
in section two).

B. INDUCTIVE ARGUMENTATION or INDUCTION, (which will be dealt with  
in section three).

SECTION TWO.

SYLLOGISM.

252. DISTINCTION OF FORMAL AND MATERIAL LOGIC: Already in the pre-anibbles to the study of **illation** (in section one), something has been said about **illation**, since in defining the nature of reasoning; or in defining its work or the sign thereof, it is impossible to abstract altogether from **illation**.

A. Now, however, **ILLATION ITSELF** is to be directly considered.

B. But **illation** is diverse, as said above (n.239,B), according to the diverse species of reasoning and argumentation.

a. Therefore:

a1. there is one consideration which is concerned with the form of deductive reasoning or deduction or the syllogism: which consideration constitutes the present section (section two).

a2. and there is another consideration which is concerned with the form of inductive reasoning or induction: which consideration will constitute the following section (section three).

b. For the form of reasoning is nothing else than the very **ILLATION ITSELF**.

C. Therefore:

a. This treatment, consisting of SECTIONS TWO AND THREE, of **illation** FORMALY considered, is rightly called FORMAL LOGIC.

b. Whereas the treatment, consisting of SECTIONS FOUR TO FIFTEEN inclusively, of **illation** in its application to diverse matters, is rightly called MATERIAL LOGIC,

D. Which may be thus schematically set forth:-

FORMALLY considered (sections II-III) is FORMAL LOGIC.

The study  
of **illation**

MATERIALLY considered (sections IV-XV) is MATERIAL LOGIC.

253. ORDER OF PROCEDURE: This section, treating of the syllogism:

A. Will consider:

- a. First, the categorical syllogism.
- b. Secondly, the hypothetic syllogism.
- c. Thirdly, other divisions of the syllogism.

B. Hence the following order

On the syllogism	The categorical syllogism-.....	Chapter- twenty-three.
	hypothetic syllogism...	Chapter twenty-four.
	Other divisions of the syllogism	Chapter twenty-five.

CHAPTER TWENTY-THREE,

THE CATEGORICAL SYLLOGISM.

254. ORDER OF PROCEDURE: This treatment of the categorical syllogism;

- A. Will consider:
  - a. First, the notion of it.
  - b. Secondly, its principles: which indeed will be treated:
    - in the first place, in themselves;
    - in the second place, with reference to the laws whereby the supreme principle is applied.
    - thirdly, its forms; and indeed:
      - in the first place, its figures and moods;
      - in the second place the reduction of its moods.
      - fourthly the value of it and of its reduction.
      - finally, the theory of the quantification of the predicate.
- B. Hence the following order

Its <b>notion</b> .....		Article one
Its principles	in themselves.	Article two.
	in the laws whereby the	
	supreme principle is applied.....	Article three.
On the categorical syllogism:	Its figures and <b>moods</b> ...	Article four.
	Reduction of its moods.	Article five.
Its value and that of its <b>reduction</b> ...		Article six.
Quantification of the predicate.....		Article seven.

ARTICLE! MORE.

NOTION OF CATEGORICAL SYLLOGISM.

255. ITS NATURE: From the examples given in the preceding section, it is already apparent what a categorical syllogism is. For all the propositions were categoric (of. n.207, B).

A. Each of those examples was an ARGUMENTATION IN WHICH A CONCLUSION DERIVED FROM A MORE UNIVERSAL TRUTH TO A LESS UNIVERSAL. THAT IS THE CATEGORICAL SYLLOGISM.

B. This definition is based upon the EXTENSION of the terms (of the concepts):

- a. but extension is a PROPERTY of a term (nn.43-47);
- b. and therefore this definition is a definition of the syllogism

FROM A PROPERTY (cf. n.169, B).

C. The SUFFICIENT definition of the syllogism, on the other hand, is based on the EXTENSION or COMPREHENSION of the terms (concepts), and therefore IS to be reposed in this, that S is united to P by the medium of M:

a. and accordingly it is an ARGUMENTATION which PROCEEDS FROM A UNIVERSAL TRUTH TO ANOTHER UNIVERSAL TRUTH.

L. This essential notion of the syllogism IS OF THE HIGHEST IMPORTANCE, as will appear later:

Loth to distinguish the syllogism from induction,

L2. and to vindicate the value of the syllogism.

256. CATEGORICAL SYLLOGISMS MAY BE CONSTRUCTED FROM HYPOTHETIC PROPOSITIONS; From the notions exposed:

A. It is clear that ALL syllogisms which proceed from a universal proposition to a universal proposition are CATEGORICAL syllogisms:

- a. whether they are composed from categorical propositions,
- b. or from hypothetical propositions (cf. n.207, B).

B. For example:

- a. Let us take this:

'If Peter moves himself, he is living.  
But if Peter runs, he moves himself.  
Therefore if Peter runs, he is living'.

b. This syllogism is CATEGORIC, and it signifies the same as the following syllogism constructed from categorical propositions:

'That which moves itself is living.  
But that which runs moves itself.  
Therefore that which runs is living'.

#### ARTICLE 70.

#### PRINCIPLES OF THE CATEGORIC SYLLOGISM.

257. THE PRINCIPLES: From the very notion of the categorical syllogism these things follow:

A. The first principle is drawn from the essential notion (n.255,C):

a. For the mind cannot proceed from a universal truth to another universal truth save BY REASON OF THE IDENTITY of the terms which are contained in the propositions. For, as we have seen above (n.200), predication itself is based on identity.

b. WHEREFORE it is clear that THE SUPREME PRINCIPLE OF THE CATEGORICAL SYLLOGISM is THE PRINCIPLE OF IDENTITY AND OF DISCREPANCY, which is thus formulated: THOSE WHICH ARE THE SAME WITH ONE THIRD ARE ALSO THE SAME WITH EACH OTHER; AND THOSE WHEREOF ONE IS THE SAME WITH A THIRD AND THE OTHER IS DISCREPANT FROM IT, ARE DIVERSE FROM EACH OTHER.

b1. NOTE however that M, with which the extremes are identified, must be taken under the same formal aspect, and therefore must be one both in thing and in concept (ratione): as St Thomas writes: "whatsoever are the same to one and the same, are the same to each other, IN THOSE WHICH ARE THE SAME IN THING AND IN CONCEPT, as tunic and garment; but not in those which differ in concept" (1, q.28, a.3 ad 1):

bla. for otherwise there would not be comparison with ONE THIRD, but with TWO;

bib. for the comparison is made with concepts: wherefore there must be:

blb1. not only identity in thing (in reality)

blb2. but also identity in concepts (ratione).

blc. For which reason (i.e. owing to lack of identity in concepts):

bid. not valid:

blcla. is this argument:





bib. Consequently, That is affirmed of \*man' must also be affirmed of each individual man. (Cf. Anal. Prior, I, 1, 24-b, 26).

b2. Note accordingly that it pertains to the essence of the syllogism properly so-called (we are not speaking of the expository syllogism, which, as will be explained later, is a syllogism only improperly so-called) that M be a universal object of a concept:

b2a. For inasmuch as M is the cause or reason of the attribution of P to S, it must itself be communicable to S; but to be communicable to many is to be universal. \*

b2b. Therefore "the principle of the syllogism resides in the universal nature" (Maritain; Introd. to Logj c, p.178).

258. y^UE OF 'IIB PRINCIPLE 'NOTA NOTAE' : MANY MODERN VBITMS. such as -liasbelier (Etudes sur le Syllogisme. following KANT (Uber die falsche Spitzfindigkeit der 4 syll., pp.52ss), substitute for the principle of the SAID ABOUT EVERY, of the SAID ABOUT NONE, another principle:

A. fAich is this: "A NOTE OF A NOTE IS A NOTE OF THE THING ITSELF. ^T IS REPUGNANT TO A NOTE IS EBPUGNANT TO TITE TffTTjn. ITSELF - NOTA\*NOTAE EST NOTA HEI IPSIUS. RSPUGNANS NOTAE REPUGNANT REI H^I".

a. Thus in the syllogism:

'Every man is mortal.  
But Peter is a man.  
Therefore Peter is mortal';

b. the note 'mortal':

b1. which enters into the comprehension of the note 'man' (i.e. is a note of the note 'man').

b2. also enters into the comprehension of the subject (thing) 'Peter' which possesses the note 'man' (i.e. also is a note of the thing itself 'Peter')

3. The REASON which they urge for this substitution is that:

a. they think that the principle of the 'said of every' (dictum de omni) considers only the extension of concepts,

b. and they prefer to it a principle based solely on the comprehension of concepts.

C. But AGAINST THIS INNOVATION it must be said:

a. That, although this principle is TRUE;

b. Yet it is INSUFFICIENT or INADEQUATE, because:

B1. It does not tell the reason why a note of a note is a note of the thing itself, v.g. yrh the note 'mortal' which belongs to 'man' must also belong to the subject 'Peter'.

bla.^ The reason indeed is the universal nature; for, from the very notion of the i^iversal, whatever is affirmed of 'man' must also be affirmed of all the subjects whex'ein the natvire 'man' is realized.

bib. Wherefrom it appears that the very principle 'nota notae' supposes the principle of the 'said of every' (dict^ de~ oimi). (Cf. T. Richard: Philosophic du raisonnement dans la Science, ch.6).

b2. Moreover the principle 'nota notae' does not tell the essential condition of the syllogism, which is that M must be taken universally at least in one proposition.

b2a. Thus the principle 'nota notae' taken alone might allow it to be thought that this syllogism is valid:

'Some man is cruel.  
But Peter is a man.  
Therefore Peter is cruel'.

b2b. But it is from the extension of terms that it is seen that this argument is invalid;

b2b1, for M is taken particularly in both premisses (cf. n.71, B.a).

b2b2. But to appeal to extension is to appeal, at least implicitly, to the principle of the 'said of every' (dictum de omni).

bS. Further, the principle 'nota notae\*' avails only for syllogisms of the first figure (cf. infra, ArtA<sup>^</sup>,

h3a. Therefore for syllogisms of the other figures, other principles would have to be adopted.

b3h. Wherefrom it follows that the principle 'nota notae\*' is not the supreme principle of the syllogism.

b4. For the rest, not true is what those writers say, namely, that the principle of the 'said of every\*' (dictum de omni) is based SOLELY on extension

D4a« For it is based on the ViliiiiY NATURE of the universal v^ich is Communicable;

b4b. and does not consider extension alone;

b4bl« for the^ extension of a universal is a property T/rfiich laresupDOses its comprehension (n.46);

b4b2, and what the principle of the 'said of every\*' (dictum de omni) does directly consider is the communicability of the universal to the subjects in which it is realized.

### ARTICLE THREE.

#### LAWS OF THE CATEGORICALi nYT.Tf)C-Tm.

^o9. THE LAWS: It is question here of the laws whereby the supreme principle of the categorical syllogism (tu wit: THOSE WHICH ARE THE SA-m VJTmH nKTP. ARE ALSO THE SAME Y/HH EACH OTHER; AMD THOSE WHEREk)P OKE IS THE SAME amp T^ other IS discrepant from it. are DIVERSE FROM EACH OTHER), IS applied; and which accordingly tell the procedure which must be foTiowedlh' order that this supreme principle may be applied.

A. FOUR LAWS CONCERN TERlvIS. to

a. First law: LET THERE BE THREE TERMS ONLY: MA.TOR. MTmr.t: awn MINOR.

b. Second law: THE TERlvIS MUST NEVER BE BROADER IN THE CONCLUSION THAN IN THE PREMISES. “ ~

c. Third law: THE MIDDLE TERM MUST NEVER ENTER INTO THE CONCLUSION.

d. Fourth law: THE MIDDLE TERM MUST BE UNIVERSAL AT T.EAST ONdR

B. AND FOUR LAWS CONCERN PROPOSITIONS, to w-! t .

a. Fifth law: PEOM TWO.NEGATIVE PREMISES NOTHING FOLLOWS.

b. Sixth law: WHEN BOTH THE PREMISES ARE AFFIRMATIVE, THE CONCLUSION MST NOT BE NEGATIVE. - ^

c. Seventh law: Tiffi\_GONCLUSION ALWAYS FOLLOWS THE WORSE PART (r.f. n.^AQ'l

d. Eighth law: IEOM WO pLtICUMSS NOTHINr, FOT.r.OWS, -- VOL.

260. LAWS FOLLOWING FROM THE FIRST PART OF THE SUPREME PRINCIPLE: From the first part of the supreme principle (to wit: THOSE Y/HICH APE THE Ramtc WITH ONE THIRD ARE ALSO THE SAME WITH EACH OTHER) follow four, of the above-stated laws:

A- LET TI^ERE BE THREE TERMS ONLY. MAJOR. MIDDLE AMD MINOR (first law).

a. It is an offence against this lav/ to use M:

a1. with diverse signification (of. nn.62-64),

a2. or with diverse supposition (n.70).

b. Likewise to use an extrane in the conclusion with a greater extension than in the premisses: wherefore THE TEHJIS MUST NEVER DE BROADER IN THE CONCLUSION THi^ IN THE PREMISES (second law).

c. Likewise if M is twice taken particularly: wherefore THE MIDDLE TERM MUST BE UNIVERSAL AT LEAST ONCE (fourth law). ~

WHEN BOTH THE PREMISES ARE AFPSatATIVE. THE CONCLUSION MUST NOT BE NEGATIVE (sixth law).

261. LAW FOLLOWING FROM THE SECOND PART OF THE SUPREME PRINCIPLE (to wit. THE SECOND PART OF THE SUPREME PRINCIPLE); From the second part of the supreme principle (to wit. THE SECOND PART OF THE SUPREME PRINCIPLE); is the, SAME WITH A THIRD AND THE OTHER IS DISCEPENT FROM IT. ARE DIVERSE FROM EACH OTHER) follows another of the above-stated laws, to wit. TWO NEGATIVE PREMISSSES NOTHING FOLLOWS (fifth law).

262. LAWS FOLLOWING FROM THE TWO PARTS TAKEN TOGETHER; From both parts taken together of the supreme principle follow the remaining three above-stated laws:

A. THE MIDDLE TERM MUST ENTER INTO THE CONCLUSION (third law).

S. THE CONCLUSION ALWAYS FOLLOWS THE WORSE PART (seventh law).

a. For if one premiss is particular the conclusion must be particular on account of the second law (or on account of the first part of the supreme principle).

b. But if one premiss is negative, the conclusion must be negative on account of the second part of the supreme principle.

C. FROM TWO PARTICULARS NOTHING FOLLOWS (eighth law).

a\* If both premisses are affirmative, all the terms have particular supposition (n.71, B), and therefore the syllogism offends against the fourth law (or against the first part of the supreme principle).

b. If both premisses are negative the syllogism offends against the fifth law (or against the second part of the supreme principle).

c. If one premiss is affirmative and the other negative, the syllogism offends against the second law (or against the first part of the supreme principle):

c1. for in this case, there is only one universal term,

c2. whereas there must be two universal terms, of which:

c2a. one is M,

c2b. and one is P of a negative conclusion (n.71,B), - for if one premiss is negative the conclusion must be negative (B.b).

265. EXAMPLES OF VIOLATIONS OF THESE LAWS; These laws may be illustrated from violations - which accordingly are violations of the SUPREME PRINCIPLE of the syllogism.

A. Examples of Violations of the FIRST LAW: THERE MUST BE THESE TERMS. AND THREE ONLY: MAJOR, MIDDLE AND MINOR

a. Example:

\*Dogs and cats are English words. (MATERIAL SUPPOSITION).

But English words do not eat meat.

Therefore dogs and cats do not eat meat'. (FORMAL SUPPOSITION).

b. But let us take:

b1. this example:

'One cat has one more tail than no cat.

But no cat has ninety-nine tails.

Therefore one cat has a hundred tails'.

b2. This argument AS IT STANDS ;

b2a. violates the seventh law, since it deduces an affirmative conclusion from premisses whereof one is negative.

b2b. and puts the major after the minor; for the premiss which contains S of the conclusion is the minor.

b2c. and appears to have five terms: to wit:

\*one cat\*, which occurs twice.

b2c2. 'having one more tail than no cat\*, which occurs once only.

b2c3. 'no cat', which occurs once only.

b2c4. 'having ninety-nine tails\*', which occurs once only.

b2c5. 'having a hundred tails', which occurs once only.

b5. Accordingly, emending this argument so as to eliminate these defects, we get this:

	M		P
	'That which is having one more tail than no cat is having	is	having a hundred tails,
	(Here 'NO CAT' is a FINITE TERM, v/^hich is S of a negative proposition.)		(since no cat is having ninety-nine tails.)
			_____
But	S		M
	one cat	is	that which is ha'ving one more tail than no cat is having.
			(Here 'NO CAT' is an 'INFINITE TISM - 'non-cat' - , which is S of an affirmative proposition).
Therefore	S		P
	one cat	' is	having a hundred tails'.

- b4. For note that:
- b4a. Not the same are these propositions:
- 'No man is endo-wed with senses' : which is NEGATIVE AND FALSE.
- ^4a2. \*Npn-m^ is endowed T^rith senses' ; which is AEFIRItATIVE AND TRUE.
- b4h. And similarly, not the same are those propositions:       ~~
- laying ninety-nine tails' : which is NEGATIVE.
- b4b2. \*N0H-CAT is having ninety-nine tails': which is —

b5. Hence in the above argument there are four terms.

- c. Let       take as a third example;
- c1. The ontological argument for the existence of God, as proposed  
by St Anselm;

'God is that than which- a greater cannot be thought of.  
But that than which a greater cannot be thought of, exists.  
Therefore God exists.'

- c2. Here again there are four terms.
- c2a. For 'exis^' in the second proposition supposes for 'signified  
existence or 'existence represented' or 'ideal existence': makin^Fh^  
proposition this: 'But that than 'which a greater cannot be thought of is  
thought of as existing'.       ^       \*
- c2b. But 'exis'!:s' in the conclusion supposes for 'existence exercisci

- d. Let us take as a fourth example:
- d1. The ontological proof for the existence of God as proposed by  
Descartes;

'A supremely perfect being exists.  
But God is a supremely perfect being.  
Therefore God exists.'

- d.,. Just as in the Anselmian formulation, so also here are feur terms;
- d.j.a. For in the premisses 'exists' supposes for 'si.gnified be' .
- d2b. ffhile in the conclusion 'exists' supposes for 'exercised be'.

- a. Let us take:
- a1. this example:

Y/hatever falls under our senses exists\*  
 But Grod does not fall under our senses.  
 Therefore God does not exists

- a2. For here:

sts^ in the major is particular (is 'some existing thinc^\*  
 (cf. n.71, B~&J; ')

a2b. but 'exist' in the conclusion is universal (no existing thins)  
 (cf. n.71, B.b).

- b. Let us take:
- b1. this example :

'Mind is endowed with activity.  
 But matter is not mind.  
 Therefore matter is not endowed with activity'.

- b2. For here:

b2a. 'endowed with activity\* in the major supposes oarticularly  
 (cf. n.71, B.^y:

b2b. but 'endowed with activity\* in the minor supooses universally  
 (cf. n.71, B.b).

C. Examples of violations of the THIRD LAW: THE MIDDLE TERli MUST NEVER ENTER INTO THE COMCLUSIONH;

- a. Let us take this example:

'All Eranciscans are poor.  
 But all Franciscans are worshippers of God.  
 Therefore all Franciscans ane poor 'worshippers of God'.  
 (m enters "the conclusion).

- b. Or this example;

'Every plant is a livinp; thing.  
 But every animal is a living thing.  
 Therefore every living thing is a plant or an animal'.  
 (M. ENTERS THE CONCLUSION).

D. Examples of violations of the FOURTH LAW: TIE MIDDLE TERM MUST BE UNIVERSAL AT LEAST ONCE:

- a. Let us take:
- a1. this example:

'Jersey cows are ^ducers of rich milk.  
 But good cows are producers of rich milk.  
 Therefore (all) good cows are Jersey cows'.

a2. Here M is not once taken universally (cf. n.71, B.a).

- b. Or let us take:
- b1. this example:

(Some 'Australians are good cricketers.  
 But the men in our regiment are Australians.  
 Therefore the men in ouj.' regiment are good cricketers'.

b2. Here M is not once taken universally (n.71, B.a).

- c. Or let us take:
- c1. this example:

'Some animal is a substance,  
 But some man is an animal.  
 Therefore some man is a substance'.

c2. Here;

c2a. similarly, M is not once taken universally (of. n.71, B.a).  
021). But the true conclusion follows from this that 'every animal  
is a substance\*.

d. Or let us take:

d1. this example:

Every great truth is difficult to understand.  
But Kant's doctrine is difficult to understand.  
Therefore Kant's doctrine is a great truth'.

d2. Here likewise M is not once taken universally (cf. n.71, 3. a).

E. Examples of violations of the FIFTH LAW: FROM TWO AFFIRMATIVE PREMISES  
NOTHING FOLLOWS:

a. Let us take this example:

'The powerful are NOT merciful. (NEGATIVE).  
But the poor are NOT powerful. (NEGATIVE).  
Therefore the poor are merciful',

b. But let us consider:

b1. this argument:

'[No, non-living thing is mortal.  
But no rock is a living thing.  
Therefore no rock is mortal'.

b2. This syllogism rightly concludes: for:

b2a. though in appearance the two premisses are negative,

b2b. in reality the second proposition is affirmative:

b2b1. for the middle term is really 'non-living thing'.

b2b2. so that the second proposition is really this 'every rock is  
a non-living thing'.

P. Examples of violations of the SIXTH LAW: WHEN THE PREMISES ARE  
AFFIRMATIVE. THE CONCLUSION MUST NOT

a. Let us take:

a1. this example:

'Every insensitive thing is passionless. (AFFIRMATIVE).  
But every non-living body is insensitive. (AFFIRMATIVE).  
Therefore no living body is passionless.' (NEGATIVE).

a2. For:

a2a. the conclusion ought to be: 'every non-living body is passionless'  
- which is AFFIRMATIVE. and also **TRUE**

a2b. whereas the third proposition" above is FALSE for plants, are  
living bodies do not have passionless.

b. But let us consider:

b1. this argument:

'Every sensitive being is different from a plant.  
But a mosquito is a sensitive being.  
Therefore a mosquito is not a plant'.

b2. This syllogism rightly concludes:

b2a. for 'different from,' in the major is equivalent to 'is not' ;  
therefore the major is really negative

G. Examples of violations of the SEVENTH LAW THE CONCLUSION ALWAYS  
FOLLOWS THE WORSE PART;

a. Let us take this example:

'Svery violation of charity ou^yht to be avoided. (UNIVSEISAL).  
Jj'Sia severity is a vioiation of charity. rPARTICULAK).  
Therefore every severity ought to be avoided'. (iKil^iSAL).

b. ,3ut let us consider:  
b1. this argument: v

'Svery anii::aL t s a living thing.  
But some aniiiiiai is not a man.  
Therefore some non-man is a living thing'.

b2. This argument rightly concludes:  
b2a. because the minor is equivalent to: 'some animal is a non-m^m' ;  
b2b. which is affirmative.

H. Example of violation of the EIGHTH LA'.7: EROM THO PARTIOTiRS  
NOTHING FOLLOWS:                                                       

\*Some avaricious people arc rogues. (PARTICULAR).  
But some politicians are avaricious. CS^SICUJ^)-  
Therefore- some politiciiaiis are rogues'.

264. .RUCTION OF THESE .LANS TO TffisHE: Those eight laws may be reduced to  
so that ItJ practice the eight law.s are observed vHEN TQGFTHJR:

       - ^ 1 .fi£st: S and P of the conclusion have the same SIGIIIFICATION and  
SUPPOSITION as in the premisses. "

Secondly: M is a.t least once universal

Thirdly: The conclusion:

- 3.\* from affirmative premisses is affirmativoj
- b. from diverse premisses is negativej
- c. from negative premisses is not drawn at all.

ARTICLE FOUR.

F0m-IS OF CATEGORIC SYLLOGISIVl.

265. DIVERSE CONSIDERATIONS OP TIE PORf,;! OP THE SYLLOGISM: As said above  
(nn.245-246), the syllogism consists of a MATTER and a ¥0MI.

\_A. But, as v/e liave seen earlier (n.245), the matter of the syllogism  
is distinguished into:

- a. the REMOTE matter, wliich is the .CONCEPTS (or TERlvTS) ;
- b. and the PROXIMATE matter, wtiicli is the PROPOSITIONS."

3. Accordingxy, the lorm oi the syllogiaxi is correspondingly  
distinguished according as it is:

@.\* -Qjr-t.l^gy. a disposition cf the remote matter or concepts: and thus  
taken the form of the syllogism is called Its FIGURE:

1). or\_ & disixjsition of the proximate matter or propositions: and thus  
taken the form of the syllogism is called its MOC)D. ' -

266. FIGURES OF THE SYLLOGISM: "Figure properly is found is mathematical  
(beings;, but transumptively in the syllogism, and this after the  
likeness of a triangular figure: for just as a triangle is a closing of  
three lines at three anjjles, so a syllogism is the concurrence of three  
propositions, to v/it, major, minor and conclusion, in three terms." (De  
Natura Syllogismorum - a work spuriously attributed to St Thoinas).

A. Accordingly, the FIGURE of a. syllogism IS:

a. The OR DISPOSITION OF THE ECTIFFILISA WITH THE MEDIUM 3Y WAY pg  
 PISDIGATS iUiD S(gPJ?XJTr  
 ———— ^YPIGJAL DISPOSITION OP Tile RaiOTE lmlA-TTai^ OF TIS SYLI/3GISM.

B. This disposition or order is FOURFOLDt

a. Thus:

(1) M... ...p	(2) P... ...M	(5.) ...M	(4) M... ...P
s...	M... . •. s	S• . ...M	M... †† ftS
S••• ...P	S*»• ...P	S«•† ...P	S•††† ...p

b. "If the medium in one proposition is subneeted and in the other is predicated, it is said to be the

bl. "and rightly, because then the medium is truly a mean, because it savours of the nature of each extreme, to v/it, of suBject and predicate." ^ (Surama Totius Logicae: Tract. VIII, c.4; note that this work was, spuriously attributed to St Thomas).

b2. This is the case in (1) and (j?) above.

c. "But if the medium in both propositions is predicated, it is said to be the SECOHD FIGURE;

c^ \* \*\*becauseo \*

cla. "although the medium is not truly a mean, savouring of the nature of subjectibility and of predication,

cibT "nevertheless:

clbl. "since to be predicated is more noble than subjectgd^

clb2. "therefore this figvu'e occupies second place." (Op.cit. ibid;.

g2. This is the case in (3) above.

d. "But if the medium, in both propositions is subjectc(3, it is said to be the THIRD FIGUKS, and it is the last:

dl. "because in it the medi^M;

dla. "does not stand in the middle as in the first,

dlb. "but is subjected always, vrfiich is less noble." (ibid).

d2. This is the case in (4) above.

o. IT IS TO BE NCTED;

,el. that:

ela. in two ways may the medium savour of both extremes: as- is seen from (1) and (^) above}

elb. and for this reason modern v/riters admit four figures.

elc. But in reality (2) is not specifically distinct from (1) unless attention be paid to the signs only and not to the concepts. Hence in reality (£) is nothing other than (1) indirect.

e2. Let us take a syllogism of the first figure (1.):

e2a. thus:

'Every MAN is mortal.  
 But Peter is a MAN.  
 Therefore Peter is mortal.'

e2b. Now;

.e2bl. by: ^, 4  
 e2bla. the exchange of the minor and the major,  
 e2blb. and the conversion of the conclusion.

e2b2. is obtained the following syllogism in (2).

'Peter is a MAN.  
 But MAN is' mortal.  
 Therefore some mortal is Peter\*•

e3. OBSERVE the necessity of converting the con°j-.MgLQp\*

e3a.~For if the conclusion remained therefore Peter is syllogisin would bo a syllogism of the first ligurcr^TJ^ ^ premiss would be placed second and the minor prorai.s3 placed first, (.for remember that the major premiss is that premiss which contains P of the conclusion). ;i '



e3b. But:

e3bl. v/hen the conversion has been made:

e3bla. the MAJOR (\*Pcter is a man') is put first, and the MINOR ('man is mortal') is put second; .  
e3blb. but in the CONCLUSION there is had  $\overline{\text{INDKG}}\text{JCT}$  PREDICATION (n.228,

C): for ? is inferior to S.

e3b2. And fi^nu'e (2) differs from figure (1) in this-only, -hat the conclusion is INDIffICT.

e3c. Foi' which reason this figure (2) is better called the FJ^ST FIGUHS IMDEGXT; inasmuch as it is indeed the first figure but as concluding {ndfirectly with indirect predication).

e4. And indeed:

o4a. this figure v/as first proposed by Galen (a.d. 151-200), wherefrom •it is called the G-Af-ENIC figure;

e4b. and is called by modern v/riters the FOURTH iiiGURB, cnoraerating it after the three ARISTOTELIC figures.

e4c. But by Aristotle and the mediaeval logicians it v/as rejected A3\_A DISTII'CT FIGURE, since it is;

c4cl. merely j'-rammatically a distinct figure,

e4c2. but is"not logically a distinct figure: because only by reason of its conclusion does it differ from the first figure, and even in the conclusion only grammatically, because logically(or according to ^ne relations of thought), its gransmatical predicate is the logical subject (v.;^ 'Peter', tho'ugh grammatically the predicate, is logically the subject,.

e4em/herefore to regard it as a distinct figure is to consider only the signs or words, and not the concepts or thought, in accordance with the tendency of many v/riters,, especially among the moderns, to constitute a "logic of words" in place of the logic of thought, or, in other vords, to reduce logic to grammar.

c. Wherefore the FIGURES of the syllogism arc thus exhibited :-

#### FIGURES OF THE SYLLOGISM

##### FIRST FIGURE

##### SECOND FIGURE

Direct ,

Indirect

S.....P

v/here M is  
FIRST SUBJECT.  
THEN PREDICATE

where M is  
FIRST PREDICATE,  
"thm su^ect'

where M is  
TWICE PREDICATE

where M is  
TWICE SUBJECT

>67 MOODS OF THE SYLIIOGI^: Since the mood of a syllogism is the order or 'dir^position of its proximate matter, or propositions:

A. The MOOD of a syllogism is the DISPC^TTTOH OF THE PROPOSITIONS, 01 TtiS SYLLOGISM ACCORDING TO QUALITY AND\_fy^ITITY.

B. MOODS OF TTIe FIRST FIGURE DIRECT,;

a. To detormine the diverse moods of the syllogism of the along with the rules to which they are subject, let vxs take some uxa:{i£IC3.

1.1AJORS      A. 'Every MAN is mortal'.  
                  E..... 'No MAN is mortal'.  
                  I..... 'Some MAN is mortal'.  
                  O..... 'Some MAN is not mortal'.

MINORS      A..... 'Every living thing is a living thing'.  
                  E. 'No living thing is a living thing'.  
                  I. 'Some living thing is a living thing'.  
                  O..... 'Some living thing is not a living thing'.

CONCLUSIONS      A..... 'Every living thing is mortal'.  
                  E. 'No living thing is mortal'.  
                  I..... 'Some living thing is mortal'.  
                  O..... 'Some living thing is not mortal'.

b. Syllogisms in this FIRST FIGURE DIRECT rightly concluding;

b1. are these four;

b1a. AAA,

b1b. SAE, f

b1c. All,

b1d. EIO.

b2. For in these syllogisms all three laws stated above (n.264) are observed; since:

b2a. S and P of the conclusion have the same signification and the same (or less) supposition as in the premisses; (n.264, A); for:

b2a1. in the conclusion of AAA, S is universal and P is particular;

b2a2. in the conclusion of EAE, S is universal and P is particular;

b2a3. in the conclusion of AEE, S is particular and P is particular;

b2a4. in the conclusion of EIO, S is particular and P is universal.

b2b. M in all is once universal (n.264, B).

b2c. in the conclusion (n.264, C);

b2c1. from affirmative premisses is affirmative (in AAA and All),

b2c2. from diverse premisses is negative (in EAE and EIO),

c. But it is otherwise\* with syllogisms in this figure whose MAJOR IS PARTICULAR, or whose MINOR IS NEGATIVE: for they do not conclude.

c1. If the MAJOR is PARTICULAR:

cla. Either it is affirmative, and then the minor is either affirmative or negative:

cla1. if the minor is affirmative, then M is twice particular;

cla2. if the minor is negative, then P of the conclusion must be universal (as P of a negative proposition: n.71, B.b): but in an affirmative major P is always particular: so that P in the conclusion would have a greater supposition than in the premisses.

clb. Or it is negative, and then the minor must be affirmative (since there is no conclusion from two negatives): but if the minor is affirmative, then M is twice particular.

c2. If the MINOR is NEGATIVE:

c2a. Then:

c2a1. the major must be affirmative, since from two negatives there is no conclusion,

c2a2. and the conclusion must be negative, since the premisses will be diverse.

c2b. But of a negative conclusion P is universal (of. n.71, B.b).

c2c. But in the affirmative major P is particular (of. n.71, B.a).

d. Wherefrom is gathered THIS RULE FOR MOODS OF THE FIRST FIGURE:

d1. THE MINOR MUST BE AFFIRMATIVE.

d2. THE MAJOR MUST BE NOT PARTICULAR.

e. MOODS OF THE SECOND FIGURE:

a. Let us take some example



b. **Syllogisma in this THIIIO) FIGLTRE rightly concluding:**

- b1. are these six; ..
- bla.; AAI,
- bib. K\o,
- blc. lAI,
- bid. All,
- ble. OAO,
- blf. EIO.
- b2. For in those syllogisms all three laws stated above (n.264) are

observed; since:

- b2a. S and P of the conclusion have the same signification and the same (or less) supposition as in the premisses; (n.264, A): for:
  - b2a1. in the conclusion of AAI, S is particular and P is particular;
  - b2a2. in the conclusion of EAO, S is particular and P is universal;
  - b2a3. in the conclusion of lAI, S is particular and P is particular;
  - b2a4. in the conclusion of All, S is particular and P is particular;
  - b2a5. in the conclusion of OAO, S is particular and P is universal;
  - b2a6. in the conclusion of EIO, S is particular and P is universal.
- b2b. M is in all of them at least once universal (n.264, B); (indeed in two of them, to wit, in AAI and in EAO, it is twice universal).
- b2c. And the conclusion (n.264, C):
  - b2c1. from affirmative premisses is affirmative (in AAI, lAI and All).
  - b2c2. from diverse premisses is negative (in EAO, OAO and EIO).

c. But it is otherwise with syllogisms in this figure whose MINOR, NEGATIVE. or whose CONCLUSION IS UNIVERSAL; for they do not conclude.

- c1. If the MINOR is NEGATIVE;
  - cla. then the conclusion will be negative or there will be no conclusion (according as the major is affirmative or negative);
  - clb. but if the conclusion is negative, then its P will be negative, and therefore universal;
  - clc. but if P is universal in the conclusion, then it would have to be universal also in the major;
  - cld. but the major, in order to have P- universal, would have to be negative;
  - cle. but then both premisses would be negative, and so there would be no conclusion.

- c2. If the CONCLUSION is UNIVERSAL:
  - c2a. then its S must be universal;
  - c2b. but then P of the minor must be universal;
  - c2c. but this, is impossible, since the minor must be affirmative, as just shown.

d. Wherefrom is gathered THIS RULE OF THE MOODS OF THE THIRD FIGURE;

- d1. THE MINOR MUST BE AFFIRMATIVE,
- d2. THE CONCLUSION MUST BE PARTICULAR.

E. MOODS OF THE FIRST FIGURE INDIRECT (CAMELIC FIGURE) :

a. Let us take some examples;

MAJORS	A. 'Every man is MORTAL'.
	E. 'No man is MORTAL'.
	I. 'Some man is MORTAL'.
	O. 'Some man is not MORTAL'.
MINORS	A.... 'Every MORTAL is a living thing'.
	E.... 'No MORTAL is a living thing'.
	I. 'Some MORTAL is a living thing'.
	O. 'Some MORTAL is not a living thing'.
CONCLUSIONS	A.... 'Every living thing is a man'.
	E. 'No living-thing is a man'.
	I. 'Some living thing is a man'.
	O — 'Some living thing is not a man'.

Why in this INDIRECT FIGURE, rightly concluding;

"bl. are these five'; (the second vov/cl here designates the major, the first vowel designates the minor),

- bla. MI,
- bib. EAE,
- blc. All,
- bid. AEO,
- bio. IEO.

b2. For in these syllogisms all three laws stated above (n.264) are observed; since:

b2a. S and P of the conclusion have the same signification and the same (or less) supposition as in the premisses; (n.264. A); for:

- b2a1. in the conclusion of MI, S is particular and P is particular;
- b2a2. in the conclusion of EAE, S is universal and P is universal;
- b2a3. in the conclusion of All, S is particular and P is particular;
- b2a4. in the conclusion of AEO, S is particular and P is universal;
- b2a5. in the conclusion of IEO, S is particular and P is universal.

b2b. M in all of them is at least once universal; (indeed in one of them, to wit, in AEO, it is universal); (n.264, B).

b2c. And the conclusion (n.264, C):

- b2c1. from affirmative premisses is affirmative (in MI and All),
- b2c2. from diverse premisses is negative (in EAE, IEO and IEO).

c. But it is otherwise with syllogisms in this indirect figure whose PARTICULAR MAJOR IS NEGATIVE, or whose PARTICULAR MINOR IS NEGATIVE, or whose UNIVERSAL CONCLUSION IS AFFIRMATIVE: for they do not conclude.

c1. If the PARTICULAR MAJOR is NEGATIVE:

- c1a. Then the conclusion will be negative;
- c1b. therefore P of the conclusion will be universal;
- c1c. but this same P in the major is only particular.

c2. If the PARTICULAR MINOR is NEGATIVE:

c2a. Then the major must be affirmative (for from two negatives there is no conclusion);

c2b. But then M will be twice particular (for it will be P of an affirmative major, and S of a particular minor).

c3. If the UNIVERSAL CONCLUSION is AFFIRMATIVE:

c3a. Then its S is universal.

c3b. But then this S is particular in the premisses, for it will be P of an affirmative minor, and therefore particular in that minor (n.71, B.a)

d. Therefore is gathered THIS RULE OF THE MOODS OF THE FIRST FIGURE, INDIRECT OR GALENIC FIGURE:

- d1. NEITHER THE MAJOR NOR THE MINOR CAN BE A PARTICULAR NEGATIVE,
- d2. NOR CAN THE CONCLUSION BE A UNIVERSAL AFFIRMATIVE.

F. THEREFORE:

a. There are NINETEEN legitimate moods of the categorical syllogism; of which:

- a1. four are in the first figure direct;
- a2. five are in the first figure indirect (Galenic figure);
- a3. four are in the second figure;
- a4. six are in the third figure.

b. Those alone being legitimate:

b1. In the first figure direct, which observe this, SIIIIj

b1a. THE MINOR MUST BE AFFIRMATIVE.

b1b. AND THE MAJOR CANNOT BE PARTICULAR.

b2. In the first figure indirect, which observe this RUI^:

b2a. NEITHER THE MAJOR NOR THE MINOR CAN BE A PARTICULAR NEGATIVE,

b2b. NOR CAN THE CONCLUSION BE A UNIVERSAL AFFIRMATIVE.

b3. In the second figure, which observe this B!aE.:

b3a. THE MINOR MUST BE AFFIRMATIVE,

b3b. AND THE MAJOR CANNOT BE PARTICULAR;

b4. In the third figure, which observe this RULE;  
b4a. TIGILLINOR MUST BE ALIPIRMATITO.  
ALIP THE CONCLUSION MUST BE

c. V/hich;  
c1. is thus schematized

[Of the FIRST FIGURE DIRECT	which is	M..,P S...M S...p'	AAA..bArbArA
			EAE..cElArEnt
	whose rule is.	The minor must be affirmative, and the major cannot be particular.	AH.. EIO..
Of the FIRST FIGURE indirect	which is	...mI [M...S...] [S...p]	— AAI.. EAE.. AH.. AEO.. IEO..,
	whose rule is:	Neither the major nor the minor can be a particular negative, nor can the conclusion be a universal affirmative.	
The NINETEEN legitimate MOODS of the categoric syllogism	which is	P...M S...M S...P	EAE.. AEE.. EIO.. AOO..
	whose rule is:	One premiss must be negative. and the major cannot be particular.	
of the THIRD FIGURE	which is	M...P M..,3 'S...P	AAI.. EAO.. IAI.. AH.. OAO.. EIO..
	whose rule is:	The minor must be affirmative and the conclusion must be particular.	

c2. Regarding which scheniatlc exliibition, NOTE;  
c2a. That on the right-hand side are given the mnemonic designations of the respective moods: in these mnemonic words, the first three vowels are to be taken.  
c2b. That these first three vowels;  
c2b1. represent respectively the MAJOR. MINOR and CONCLUSION  
c2b2. except in the first figure's indirect, where they represent respectively the MINOR. MAJOR and CONCLUSION. - this exception being due to this, that the major and minor of the first indirect figure are got by merely exchanging the major and minor of the first direct figure (cf. 266, A. c2).

268, EXAIvfPfJIS Ob\* ThE J~EGITn!ATE MOODS; It iiiiuy be helpful to give here an' example-of each of the legitimate moods. But note that in each example: M is printed in capital letters; P is underlined.

A. EXAI/tPLES OP THE MOODS OP THE PIP^T FIGURE DIRECT;

a. Which FIGUI^ is; M. .P  
S. .M

b. EXAJ>I?LE OF;

b1. bArbArA; Every PROXiMATS PRmCIPIJE is specified from its formal object. ...A  
OP OPnUTION

But every operative habit is a PROXiQiATE PRIIJCIPLB OP OPERATION. •...A

Therefore every operative habit is specified from its. formal object.

b2. cElArEnt: No MAN is a hater of himself ... .E

But every maniac is ailAN. .. .A

maniac is a hater of himself. .. .E

b3 dArll: Everything HARI,TPUL TO (is due) ought to bo suppressed# ...A  
PUBLilG MORALS

But some publications are HAmU?UL TO PUBLIC MORALS. ...I

Therefore some publications (eire due) ought to be suppressed. ...I

b4. fErIO; ^thing MOSE SUPPRESSION (is duo) ought to bo suppressed. .. .E  
WOULD ENTAIL MORE  
HARM THAN ITS  
TOKE^IATION

But some are such that THEro\_SUe;r PFFBBTON WOULD EfITAIL i'^nPF. H.IBM THAN THEIR. »••X

Therefore some pernicious have ^ue) ought not to bo suppressed# .. .0  
publications not

B. EKAJ-iPLES OP THE MOODS OP THE FIRST PIOUSPE INDIRECT;

a. Vfllich FIGURE is ; P,... .M  
M.S

"b. EX.WPLE OP:

a IJWACE TO THE  
PUBLIC GOOD. A

But no one v;ho is a (is due) ought to go  
i?ENACE TO THE unpunished. ' E  
PUBLIC GOOD.

Thei-efore no S

I

.

A

I

b4. fA^SsriD: No good (is SACRIFICING) sacrifices  
administrator THE HU) BOR THE MEANS.



b5. frltjS30m(orum) : No phi.lo?30pher (is MAKING) makes A3SUSD ASSE TIONS. ...E

But some WHO.MAIO!: are vvi'iting) Y/rite cleverly on philosophical ASaittTiONS- questions. ...I

Therefore some \who v/rito are cleverly on not genuine philosophers. ...O philosophical questions

0. EXAJ^IPLES OP THE MOODS OP THE SECOND FIGURE;

a. Which FIGURE is: P..M

S...P

b. EXAMPLE OP:

cEsArE: No thing endov/ed is DEVOID OP UNIVERSAL v/ith intellect CONGEFTS. ....E

But every thing \which lacks is DEVOID OP UIIIVSRSAI speech CONCEPTS. -A-

Therefore no thing Y/'hich lacks is endowed with intellect. -E-

b2. cAihEsTrEs: Every arrogant is GRAVELY DEPICIMT IN PRUDENCE. person lilfillILITY AI@ CHARITY. ...^

But no saint is GRATOLY DLT'ICIEt'IT IN ?RL@IMCE, HU1,ILLITY At@ Cfl^ITY. ...B

Therefore no saint is arrogant. ...kS

b3. fEstInO: No f^reat scholar is LACKING IN MODESTY.

But some pretended are LAGtaNG IN MODESTY. scholars

Therefore some pretended are great scholars. scholars not

b4. bArOcO: Every great Is a THINKER WITH A PROPOUND philosopher E-ESIECT IDR THE PRINCIPLES' OP REASON

But some philosophers are THINKERS WITH A PROTOUND net RESPECT 'for the 'miNCIPLES OP RLiSON.

Therefore some philosophers lire groat philosophers. not

#### D. EMPLS OP THE MOODS OP THE •rang FIGURE:

a. Which FIGURE I<sub>3</sub>;

M.P  
M.S

**b. EXAMPLE OP:**

bl. dArAptl: Every GO<sup>A</sup>/ETO<sup>J</sup>MEtIT is liable to fail from its duty. ..

But every GOVERNMENT is bound, to' protect  
the public good  
from its enemies. ..

Therefore sorae who are bound are liable to fail to protect the public good from its enemies from their duty. ..

b2. fElAptOn: No GRAVE THREAT is removed by mere  
THE PUBLIC ^OD apathy.

But every GRAW. THREAT TO is tolerated only with  
THE PUBLIC GOOD grave guilt.

Therefore some thing which is is removed by mere  
tolerated only not apathy.  
with grave guilt

**b3. dIsAmIs:** Some DIPLOMATS are replies.

But every DIPLOMiCT is a man of high social standing.

Therefore some men of high social standing are rogues.

b4. dAtlsI; Every GREAT POET (is uttering) utters noble sentiments.

But some GREAT POETS are men of ignoble character.,.

Therefore some men of ignoble (are uttering) utter  
character noble sentiments.

b5. bOcArdO: Some GREAT ATHLETE is not a patriot.

But every GREA'p ATHLETE is a'popular hero.

Therefore some popular herb is not a patriot.

b6. fErlsOn: No\_ AVARICIOUS MAN. (is able to) can  
relied on to  
avoid dishonesty.

But some AVARICIOUS MAN is a public personage.

Therefore some public personage (is able to) cannot  
not relied on to  
avoid dishonesty.

....

#### ARTICLE FIVE.

#### REDUCTION OF THE MOODS OR THE CATEGORIC SYLLOGISMS

269 NECESSITY OF REDUCTION: The reduction of a syllogism is the RESOLUTION OF A SYLLOGISM TO ITS REGULATIVE PRINCIPLES (i.e. to the «dictum de pimi and the 'dictum de nullo'\*)

A. For the moods of the FIRST FIGURE DIRECT are more perfect than the moods of the OTHER FIGURE DIRECT, are immediately regulated

u 4.V.- M-iotnm d® ' and 'dictum de nullo' :

this is the first figure

ala. the extension of the terms is in this order  $P \supset M \supset S$ : for that,

ala1. of P is greater than of M,

Ala2. and of M is greater than of S;

alb. which is manifested by the order of predication, inasmuch as;

alb1. P is in both its appearances predicate,

alb2. S is in both its appearances subject,

alb3. M stands between those two as subject to P and as predicate to S. 4. 4- q 266.B.

a]c Wherefore in these moods-M manifests itself as a middle. ( 4. 4- q 266.B. \*

b.' But the moods of the OTHER FIGURES are only mediately  
Mood of 'dictum de omni' and the 'dictum de nullo'. by means of some particular determination;

b1. the reason of this is that:

b1a. in the second figure the extension of M is between the extension of P and of S; the order of extension being  $M \supset P \supset S$ ;

“ Sa in the third figure the extension of P is greater than of S and of S greater than of M; the order of extension being  $P \supset S \supset M$ ,

b1c In the fourth figure indirect the extension of S is greater than of M and of M greater than of P; the order of extension being  $S \supset M \supset P$ .

^2 Whence it follows that in these other figures the consequence does not so easily nor so clearly appear as in the first figure direct.

b3; 4. 4- q 266.B. the first figure are called 'perfect'.

“““““Srihilo the moods of the other figures are called IMPERFECT MOODS or imperfect syllogisms.

B. Indeed:

a. Since in the second figure;

1- S: M is the first figure regulates the mood of this second figure in the first figure.

which can be affirmed of 'S', 'M' can be affirmed of 'S';

cannot be affirmed of 'S';

a2b. if 'fish\*' can be denied of 'man', then 'man\*' cannot be affirmed of anything," of which ~^ fish\* cannot be denied, v.g. 'trout'.

b. But since in the third figure;

b1. the order of extension is P-S-M,

b2. the 'dictum de omni\*' and 'dictum de nullo\*' regulates the moods of this third figure only by the medium of this principle which is called the 'dictum de parte\*': THOMAS, YDNCH COLITAIIf SOME COMMON PART, PARTIALLY AGREE; BUT IF ONE CONTAINS A PART, WHICH THE OTHER DOES NOT CONTAIN, THEY DIFFER PARTLY; which may be easily understood from two examples:

b2a. since 'rogue\*' and 'man of high social standing\*' (in the example given above: n.260, D.b3) both contain 'diplomat' (as inferiors), then according to that inferior, they agree with each other;

b2b. since 'popular hero' (in the example given above: n.268, D.b5) contains 'some athlete\*' (as an inferior) which 'patriot' does not contain (as an inferior), then according to that part (that inferior of 'popular hero'), 'patriot\*' and 'popular hero\*' do not agree.

C. Therefore it is necessary to reduce the Imperfect moods of the other figures to the perfect moods of the first figure;

a. in order that the application of the 'dictum de omni' and the 'dictum de nullo\*' may the more clearly appear;

b. and thus the consequence may the more clearly and readily appear.

270. MODES OF REDUCTION: But this reduction is made in two ways:

A. By DIRECT or OSTENSIVE reduction, whereby is manifested by a syllogism of the first figure the same conclusion as in the imperfect syllogism.

a. This direct reduction is effected by two operations: to wit:

a1. by the conversion of one or the other of the propositions of the imperfect syllogism;

a2. and by the transposition of the major into the minor.

b. This direct reduction is possible for all the imperfect moods, except 'Baroco\*' and 'Bocardo\*' which are reduced only by reduction by the impossible (per impossibile^^)

B. By REDUCTION PER IMPOSSIBLE\*, which shows, by means of a syllogism of the first figure, that the conclusion of the imperfect syllogism cannot be denied while its premisses stand, without contradiction. Thus it is shown that the imperfect syllogism rightly concludes.

a. This reduction therefore supposes two things, to wit:

a1. the denial of the conclusion, which is supposed to be false;

a2. the acceptance of the premisses, which are conceded.

b. For which reason:

b1. the contradictory of the conclusion is formed, and substituted for one of the premisses;

b2. from the other premiss and the new proposition a syllogism of the first figure is made, whose conclusion is the contradictory of the omitted premiss - which had been conceded.

c. This reduction 'per impossibile' is possible for all the imperfect moods; and indeed, as said above, 'Baroco\*' and 'Bocardo\*', are reducible in this way only.

271. PRACTICAL RULES OF REDUCTION: Practically, however, the operations to be performed for the reduction of the moods are indicated by certain consonants in the mnemonic words (Cesare, Camestres, etc).

A. The first letter of each imperfect mood which is found in the moods of the first figure (direct) indicates to which mood the reduction must be made;

a. Thus syllogisms in 'Dabitis\*' (first figure indirect), in 'Disamis' (third figure), and in 'Darapti' (third figure), are converted into a syllogism in 'Dari' (first figure direct).

b. Similarly syllogisms in 'Baroco\*' and in 'Bocardo\*' are converted into 'Barbara\*'; and so on

B. The letter which in the imperfect moods follows the vowels indicating the propositions, indicates the operations to be performed, provided this letter, is one of the following;

- a. 'a' signifies simple conversion. Thus 'ceSai'o', 'cameStireS'.
- b. 'p' signifies accidental conversion (conversion accidens'). Thus 'doraPti', 'folapton\*.
- c. 'm' signifies the transposition (mutatio) of the major into the place of the minor, or vice versa. Thus 'disaMis', 'caMestres'.
- d. 'c' indicates that reduction 'per impossibile' is the only mode of reduction, and indicates for which premises the contradiction of the conclusion is to be substituted. Thus 'b^o^', 'boCardo\*.

C. Let us take some EXAMPLES;

a. Let us take \*

a1. a syllogism of the second figure in 'CeSare':

CeS	'No man is a PLANT.
ar	But every animal is a PLANT,
e.	Therefore no animal is a man'.

a2. Now;

a2a. 'C' signifies that this is to be converted into 'Celarent\*.

a2b. 's' signifies that the major is to be converted simply.

a3. Therefore this syllogism is obtained;

Cel	'No PLant is a man.
ar	But every animal is a PLANT.
ent	Therefore no animal is a man*.

b. Let us take as a second example the conversion of a syllogism of the second figure in 'Camestres': which is more difficult;

b1. Let this be the syllogism;

C^I	'Every tree is a PLANT.
eStr	But no man is a KLAOT.
eS	Therefore no man is a tree'.

b2. Now;

b2a. 'C' shows that the reduction is to be made into 'Celarent'.

b.2b. 'ki' shows that the major is to be transposed into the place of the minor.

b2c. 's' shows that the minor is to be converted simply.

b2d. 's' following the third vowel'd shows that the conclusion is to be converted simply.

b3. Therefore this syllogism is obtained:

Cel	'No PLANT is a man.
ar	But every tree is a PLANT,
ent	Therefore no tree is a man',

c. Let the third example be that of a syllogism in 'Bocardo' (third figure):

c1. Let the syllogism be this:

BoC	'Some ANBiAL is not a stone.
ard	But every ANBiAL is a living thing.
o	Therefore some living thing is not a stone*.

c2. Now;

c2a. 'B' indicates that the reduction must be made into Barbara, .

c2b. 'c' indicates;

c2b1. that the reduction is 'per impossibile';

c2b2. and that the contradictory of the conclusion is to be substituted for the major.

c2c. And then the conclusion of the syllogism in 'Barbara' will be the contradiction of the major of the syllogism in 'Bocardo'. ..

c3. Thus this syllogism is obtained:

Bar	'Every LIVING THING is a stone.	,	"
bar	But every animal is a LIVING THING.		
a.	Therefore every animal is a stone'.		

## ARTICLE SIX/

VALUE OF THE SYLLOGISM AND ITS REDUCTION.

272. VALUE OF THE SYLLOGISM: The value of the syllogism is denied by many, especially by NOMINALISTS, who, identifying the universal with a collection of individuals" (36, 89), logically say that the syllogism is either tautological or a vicious circle. Thus speak John Stuart Mill and Goblot.

A. For if this MAJOR; 'every man is mortal', signified: 'all men are mortal', because I have observed the death of each man contained in that collection, then indeed it would have to be said that the syllogism is tautological and a vicious circle.

a. TAUTOLOGICAL indeed, because the major would contain the conclusion actually (and not merely virtually). For I would not know that all men are mortal, if I did not know that Peter is mortal.

b. 'And at the same time a VICIOUS CIRCLE, for it follows therefrom that the truth of the conclusion is supposed by the major.

B. But in reality the syllogism is quite OTHERWISE;

a. True indeed it is that the syllogism LOGICALLY (i.e. if the logical relations be considered) concludes from a MORE UNIVERSAL to a LESS UNIVERSAL: in other words, it does pay attention to extension or to subjects (individuals).

al. Nevertheless, as has been said above (n.255.).

ala. this consideration of the syllogism is a consideration of it according to a property,

alb. and this reference to extension is only a required condition (conditio sine qua non) of its legitimacy.

a2. For:

a2a. I know that S and P are identified with each other,

a2b. only through knowing that each of them is identified with M;

a2c. but:

a2c1. I cannot know that P is identified with M unless I know that M is one of those that can receive the predication of P (i.e. that M is contained within the extension of P);

a2c2. and similarly I cannot know that S is identified with M unless I know that S is one of those that can receive the predication of M (i.e. that S is contained within the extension of M).

a2d. Therefore I cannot predicate P of S (i.e. identify S and P) UNLESS I know that M is contained within the extension of P and that S is contained within the extension of M;

a2e. Nevertheless, I predicate P of S, that is, IDENTIFY S and P;

a2c1. not because M is contained under the extension of P, and S is contained under the extension of M,

a2o2. but BECAUSE each of the two, to wit, each of S and P IS IDENTIFIED WITH THE SAME THIRD, to wit, with M.

a2j\* Therefore

a2fi. that consideration of the extension of the terms is a property of the syllogism, and indeed a required condition to the legitimacy of the syllogism or, in other words, to the legitimacy of the IDENTIFICATION OF S AND P WITH EACH OTHER BY THE MEDIUM OF M, inasmuch as each of them is

identified with Mj

a2f2. but it is in fact the essence of the syllogism, this essence consisting in the IPATTPICATION OF 3 AW P'WITH YACILL OTm-Tf^ BY THE IKPILM OF M.

a3. Now it is to be explained why it is said that LOGICALLY considered the syllogism proceeds from a more universal to a less universal:

a3a. Let us take:

a3a1. this example, where the conclusion is less universal than the major

\*Animal is a living body. .... MORE UNIVERSAL.  
But man is an animal.  
Therefore man is a living body'. - - LESS UNIVERSAL.

a3a2. The extensions of the terms in this syllogism may be thus shown diagrammatically

greatest.

middle.

least.

a3b. But now let us take:

a3b1. this example:

\*A rational being is a social being;  
But man is a rational being.  
Therefore man is a social being\*-..

a3b2. In this syllogism:

a3b2a. the conclusion is not less universal than the major, but is equally universal with it: for 'man' and 'rational animal' are of the same extension.

a3b2b. Accordingly, the extensions of the terms may be thus shown diagrammatically

SOCIAL BEING - - - - same.  
RATIONAL BEING .same.  
MAN .same.

a3c. But:

a3c1. the extensions as thus shown are the LOGICAL extensions; and WHEN REAL EXTENSIONS are considered, it must be said that this syllogism does not proceed from a more universal to a less universal, but proceeds from ONE UNIVERSAL TO ANOTHER UNIVERSAL, and indeed of the SAME universality.

a3c2. But nevertheless what was said above is true, namely, that LOGICALLY considered the syllogism proceeds from a MORE universal to a LESS which is thus explained:

a3c2a. Let us diagrammatise the extensions of this same syllogism in another way:

a3c2b. Here;

a3c2bl. it clearly appears:

a3c2bla. that M (rational being) is one of those that can receive the predication of P (social being), i.e. is contained v/ithin the extension of P;

a3c2blb. and that S (man) is one of those that can receive the predication of M (rational being), i.e. is contained v/ithin the extension of M.

a3c2b2. And thus is exhibited the LOGICAL extensions of the terms, i.e. the extensions according to which these terms are related to each other AS THEY ARE RELATED to EACH OTHER in the SYLLOGISM.

a3c2b3. And it is in this sense that the syllogism proceeds from the MORE universal ('a rational being is a social being') to the LESS universal ('man is a social being').

a3c2b4. But this DESCENT or procession from a more universal to a less universal:

a3c2b4a. pertains to the logical consideration of the syllogism,

a3c2b4b. and is a mere property (not the essence) of the syllogism.

a3d. And indeed:

a3dl. to manifest more clearly this distinction betw/een the REAL and the LOGICAL extensions of the terms of the syllogism, let us take this syllogism:

'Every rational being is man.

But every social being is a rational being.

Therefore every social being is man'.

a3d2. Here:

a3d2a. the three terms have the same REAL extension as they had in the previous syllogism, for they are the same terms;

a3d2b. but they have here DIVERSE - and even inverse - LOGICAL extensions AS TAKEN LOGICALLY must be diagrammatized thus:-

b. Hence it is clear that the syllogism, if attention be paid to the EXTENSION of the terms, or, - what amounts to the same, - to their REAL extension, does not always have the conclusion less universal than the premisses.

c. Accordingly, the ESSENCE of the syllogism lies in this, that S is united to P by the medium of M; or, in other words, that it passes a predicate (P) from one universal subject (j-i) to which it is attributed in the major - in syllogisms of the first figure, to which, for the rest, all syllogisms in other figures are reducible - to another universal subject (S) to which it is attributed in the conclusion, doing so through the further identification in the minor of S with the same M; which means that the syllogism proceeds from a UNIVERSAL TRUTH (in the major) to another UNIVERSAL truth (in the conclusion) - with indifference to whether this other universal truth be less universal (as in the example given earlier: a3al) or equally



universal (as in the example given later: a3b1, aSd1).

c1. But a universal is not a collection, of individuals or of subjects as has been shown above (nn.88-91);

cla. and therefore to know that man is mortal (or that every man is mortal) is not formally the same as knowing that Peter and Paul and John and Caesar and Napoleon and Wellington and Pius XII and each of the whole collection of men, is mortal.

clb. But a universal is a NATUHE which contains subjects in potency only: for just as genus only potentially contains the species contained beneath it, (n.121, C.17 so also does species (v.g. 'man') only potentially contain individuals (v.g. 'Peter'. 'Paul'. 'Pius XII' etc);

clc. For which reason it must be said:

del. That to proceed from this truth; 'every man is mortal', to this truth: 'Peter is mortal'. is to proceed to a NEW TRUTH (cf. n.242):

clcla. which was not (formally) known when the former truth was known,

clclb. and independently of which the former truth was known.

clc2. That the major contains the conclusion;

clc2a. not as a more universal proposition (formally known) contains a less universal proposition (formally known), i.e. actually implicitly,

clc2b. but as a cause or principle contains its effect, i.e. virtually (cf. nn.241-242).

c2. THEREFORE:

c2a. The major;

c2a1. of the syllogism is:

c2a1a. not 'ALL MEN ARE mortal'.

c2a1b. but 'EVERY MAN IS mortal'.

c2a2. and the knowledge of its truth depends:

c2a2a. not upon knowing the death of all men,

c2a2b. but upon knowing the nature of man, which, since it consists of soul and body, "bears within itself the character 'mortal'.

c2b. Therefore the formula: 'all men are —':

c2b1. is less correct,

c2b2. although it can be understood in a legitimate sense, according as this is sub-understood: 'on account of man's nature'.

c2c. The difference:

c2c1. between these two formulas appears clearly from:

G2ola. this example:

<p>'all men are mortal. * ~</p>	<p>....which may signify this: 'Peter is mortal and ____. John is mortal and Caesar is mortal and Pius XII is mortal etc'; in which case that major is NOT A UNIVERSAL truth, but is a mere collection of many singular truths.</p>
-------------------------------------	---

But Peter is a man.

<p>Therefore Peter is mortal*... ^ ~ ~</p>	<p>...which then is merely ONE OF THOSE MANY SEXUAL truths which was already known (formally) when the major was known, and is contained formally (or actually implicitly) in the major.</p>
--	--

c2clb. In which case the syllogism is (cf. A):

c2clb1. merely tautological.

c2clb2. and a vicious circle.

c2c2. and:

c2c2a. this example:

<p>'EVERYMAN IS mortal. —— ———</p>	<p>...which signifies this: 'In whatsoever the nature (or block of reality) MAN is. in that the nature (or real character) MORTAL is*: in which case that major is a UNIVERSAL truth.</p>
<p>But Peter is a man.</p>	<p>...which signifies this: 'But that nature..(of the block of Q of reality) MAN is in Peter'.</p>
<p>Therefore Peter is mortal'... ^ ^</p>	<p>...which signifies this- 'Therefore nature (or real character) MORTAL*.</p>

c2c2b. In which case;  
 c2c2b1. the major is known independently of any knowledge of the conclusion (or even of the minor).  
 c2c2b2. and the syllogism;  
 c2c2b2a. is neither tautological.  
 c2c2b2b. nor is a vicious 'circle.

d. Therefore;  
 d1. it is necessary carefully to distinguish from the syllogism;  
 dla. such speeches;-

dial, as this;

ALL THOSE INHABITANTS OF town X  
 perished in the tidal wave. ....which is not a universal truth, but a mere  
 COLLECTION of many singular truths: and it  
 cannot be known unless each of those  
 singular truths is known: therefore it  
 formally (or actually implicitly) contains  
 this truth: 'James perished in the tidal  
 wave'.

But James was an inhabitant of  
 town X.

Therefore James perished in  
 the tidal wave. ....which is not a conclusion; that is, it is  
 known, not PROM, but IN, that first truth,  
 (of. n,241).

dla2. and this;

ALL THE APOSTLES were martyred. ....which is not a universal truth, but a mere  
 COLLECTION of twelve singular truths:  
 'Peter was martyred' 'Andrew was martyred'  
 'Thomas was martyred' and so on.

But Andrew was an apostle.

Therefore Andrew was martyred'. ... which again is not a conclusion.

dlb. Such speeches as these:  
 dlb1. merely have the external appearance of the syllogism;  
 dlb2. and are employed only that we may proceed to some sort of  
 verification or sensible identification of a fact recorded in a proposition  
 which presupposes it as known, but which we know only because we remember it  
 or are told it by someone else" (Maritain; *Intro. to Logic*, p.211).  
 dlb3. "But, precisely in such cases there is neither reasoning nor  
 inference, and no true logician has ever regarded them as valid examples of the  
 syllogism" (Maritain; *ibid.*).

d1e. But a true syllogism is had in 'this example;

EVERY APOSTLE WAS commissioned  
 by Christ to teach. ....which is UNIVERSAL.

But Andrew was an apostle.

Therefore Andrew was commissioned  
 — by Christ to teach'. ....which is a NEW TRUTH CONCLUDED.

d2. But many NOMINALISTIC writers, such as John Stuart Mill and Gribble:  
 d2a. misunderstanding the nature of the syllogism, think that those  
 pseudo-syllogisms exemplified above (dla) are true syllogisms, and that the  
 syllogism is essentially of that kind;  
 d2b. who 'force logically' - given that conception of the syllogism  
 in other words, given NOMINALISM - they say that the syllogism is  
 either tautological or a vicious circle.

e. To complete the understanding of what has been said above, when it  
 was said that it is of the ESSENCE of the syllogism to proceed from a  
 universal to a particular (mother UNIVERSAL to particular)

e1. Note that in the syllogism every singular term is equivalent to a  
 universal term, in this sense that it necessarily includes, without any further  
 restriction, the whole extension of the subject which it signifies.

ola. Thus 'Peter' is not restricted by the particularising particle 'some' to 'soTiO Peter', but rather remains unrestricted like an -unrestricted universal; and similarly 'ShaV:espearo' is not restricted to sornethi^ loss than its whole extension, but remains, as ffir as J;iOW.Cj|Vlj\_con3ideration oi -the syllogism is conoei'ncd, in the condition of an \inrestricted universal.

elb. For this reason:

elb1. the proposition: 'Shakespeare is a poet' is an A-proposition: . . . . .

elb2. and this 3vlo;?ism is in '~^Barbara' :

'Every great poet is a man of genius.	- - - - -
But Shakespeare is a great poet.	- - - - -
Therefore Shakespeare is a man of genius'.	- - - - -

e2. Vwherefore if some syllogism proceeds to a SPTGUIAR truth;

e2a. this is accidental (per accidens),

e2b. and it remains that essentially 3c) the syllogism proceeds

to a UNIVERSAL.

273. VALUE OP THE REDUCTION OP THE DIPERPECT SYLLOGISM: Just as the value of the syllogism 's denied by some (n.272), so also the value of the reduction of an im^r/ect syllogism is denied by some, such as Lacholigr;

A. They are moved by this reason that:

a. the reduction is effected by means of conversion; (cf. nn. - ;

b. but conversion itself, they say, is a syllogian of the tnird\_figigr

(cf. n.267), whereof the major is sub-understood.

B. But it is FALSE, as we have seen above (n.243), to say that conversion is a syllogism.

C. And indeed, since in conversion the signification of P a^ of S remains unchanged in either proposition, that unexpressed major is tautological, - in spite of whatever Lacholigr may say to tne contrary.

a. For if the proposition 'm^ is mortal' is converted into the proposition 'some mortal is man', then, according to L^hglit^.

a1. the former is the minor of a syllogian of the third figure,

a2. while the latter is the conclusion of it.

b. But then:

b1. 'Man' (? of the conclusion) must be P of the major;

•b2! and 'mortal' (S of the conclusion) must be P of the minor.

b3. Therefore the subject of the minor ('man') must be M.

b4. And thus:

b4a. we get this:

		M	
MAJOR:		'Man	is man...
			is
		'T'	
		M	S
MINOR:	But	man	is mortal.]
		3/	P ^
CONCLUSION;	Therefore	some mortal	is man*.

b4b. whidi is this:

A = A

A = B

B = A

b4c. Wliich is not surprising:

.b4cl. for in conversion the same truth is retained.

b4c2. whereas in reasoning or inference properly so-called there is passage from one truth to ANOTiffiR truth. (Cf. nn...41-242).

ARTICUB SEVEN.

QUANTIFICATION OF THE PREDICATE.

274. THEORY OF THE QUANTIFICATION OF THE HiEDICATE: Hamilton (1788-1856) thought that the theory of the proposition and of the syllogism could be perfected by his doctrine of the quantification of the predicate.

A. He starts from the principle that logic ought to "state explicitly what is thought implicitly" ^ i.e. that logic ought to substitute for the expressions of every-day speech expressions in which everything implicitly contained in thought would be explicitly signified.

B. From this he concludes that in every proposition P ought tp be modified by a sign expressing explicitly its quantity.

C. And indeed he regards every proposition as an equation between two concepts of a determinate extension, or, so to speak, between two logical quantities.

a. Thus he regards the proposition 'every man is mortal\*' as signifying this thought:

The whole  
expanse of man

a determinate part  
of the expanse of mortal

b. Accordingly he distinguishes:  
b1. as many propositions,  
b2. as there can be 'a priori' combinations between one logical quantity (universal or particular) and another.

D. Therefore:  
a. Instead of the four kinds of propositions (A, E, I, O) distinguished above (n.218, A-3),  
b. he distinguishes eight kinds of propositions, thus :-

	NAME	EXAMPLE	SYIABOL
	↓	↓	
Affirmative	1. toto-total:	'All man is ALL rational'. <sup>s</sup> ...a*-a.	
	2. toto-partial:	'All man is SOME animal*'. ...a*-i»	
	3. parti-total:	'Some animal is ALL rational*.. ... i- a*	
	4. parti-partial:	'Some animal is SOME intelligent being* — — •»«l'-i.	
Prepos- itions:			
Negative	5. toto-total:	'No man is ITO angel* or (more correctly) 'Every man is NO angel'. e-e.	
	toto-partiali	'No man is SOME animal' (viz. irrational animal).e-o.	
	7. parti-total;	'Some animal (v.g. man) is NO angel. o-e.	
		SOME intelligent being' (v.g. angel)..... o-o.	

E. Hamilton says that it is a defect in traditional logic that it has not recognised:

- a. these affirmative propositions:
  - a1. a-a,
  - a2. i-a;
- b. nor these negative propositions:
  - b1. e-D,
  - b2. 0-0.

F. He enumerates eighteen advantages that his reform would bring to logic, whereof the chief are these:

a. It reduces the conversion of propositions from three species to one, namely, to simple conversion, i.e. to conversion without change of quantity (cf. 222, A).

b. It reduces "all the general rules of categorical syllogisms to a single canon" and results in "the abrogation of all the special laws of the syllogism".

- b1. According to this doctrine the syllogism:
  - bla. admits thirty-six legitimate moods,
  - bib. and rests solely upon the principle of the substitution of similars; for it consists solely:
    - blb1. given that  $y = z$  (which is the major),
    - blb2. in substituting  $z$  for its equal ( $y$ ) in the proposition  $x - y$ . (which is the minor),
    - blb3. thus getting this result  $x = z$  (which is the conclusion).
- b2. It follows from this that;
  - b2a. "the figure is a non-essential variation in the syllogistic form,
  - b2b. "and in consequence it is absurd to reduce the syllogisms of other figures to the first."

275. DOCTRINE OF ARISTOTLE AND OF ST THOMAS: Though it is often thought that this suggestion of the quantification of the predicate has been raised only in recent times, nevertheless it was discussed by Aristotle, Ammonius, Boethius, St Albert the Great, St Thomas, and the mediaeval Nominalists.

A. For ARISTOTLE writes: "But in this that a universal is predicated, that which is to predicate universally is not true. For no affirmation will be true, in which there would be predication universally from a universal predicate, as 'Every man is every animal'." (Periherm. lib.I, c.7).

3. Commenting upon which ST THOMAS says: "Next"(Aristotle) "removes something which could be doubtful. For because he had laid down a certain diversity in the opposition of enunciations from this, that a universal is taken on the part of the subject universally or non-universally, someone might think that a similar diversity would arise from the side of the predicate, to wit, from this, that a universal could be predicated both universally and non-universally; and therefore to exclude this, he says that in this that some universal is predicated, it is not true that a universal is predicated universally. Of which indeed the reason can be twofold.

a. "One indeed, because such a manner of predicating seems repugnant to a predicate according to the proper character which it has in an enunciation

- al. "For:
  - ala. "it has been said above that the predicate is, as it were, the formal part of the enunciation, but the subject is the material part of it;
  - alb. "but when some universal is uttered universally, the universal itself is taken according to the relation which it has to the singulars, which it contains beneath itself; just as also when a universal is uttered particularly, it is taken according to the relation which it has to some of those contained beneath it; and thus each of these pertains to the material determination of the universal;

alcT "and therefore neither the universal sign nor the particular sign is fittingly added to the predicate, but rather to the subject: for more

I V, != cn than: 'fiverv man i s no ass' ; and

^^ a2. "But sometimes there is foimd ^ty^^to^more^than philosophers to a predicate, ° eenus, they are investigating ?he subject; and this chiefly when, naying it is said that the completive differences of the species, as in — soul is a certain act^

''' 1,. "But another reason can be taken on the part of the truth of an enunciation: ' m,, -irt nffirmations. which would he false bl. "and this has place specially M ,,,anlfesting what

i: sd sfdi:::-srdSrsiLr^il^^

as if it were said: 'gverj^man is earlier, hla. "For it must needs he, singulars which are contained that this predicate 'animal ,vhich are contained under man; ""d^tSs'^cSnoffe true/n^itSer if the predicate^he imt^^ than the^ subject,^nor if thejradicate^he^c^er^w^

or all risihles: bllD2. "which is repugnant to the character of the singular, which is taken under the universal. i nv the oarticlar affirmative, b2. "But the negative universal sign subject, neverthe- felfififSt"eprranI'to"tLth"if they he placed on the side of the

^^1fs!-"Fcr it happens that for this is true: 'every man is no stg^ , and iiKewi man is some animal'. <n-in<T in whatsoever matter it he -h2h. "BuFThis: 'every man is every animgJ^> xn mxa. uttered, is false. .^v,,-.nrwin+ions always false; as ivo...^'°;J:^L'irevry (wMch\as the same cause of falsity with thisl ^every man is every /5

b2cl. "and if there be others similar,, they are always false: for in than all there is the same reason. Philosopher condemns this: , ':^t^eJrSral"v^es1; —Lf^h^rall similars with it are to he coSdannei" (HT I Periherm. lect.10).

A. Quantification of the predicate is in according to "Jh^proper office of the predicate, other words, is incompatible with the proper ~~on-K-~~

py,, ^-hra fr.Twm of the enunciation or proposition is the very oompofikr^d^ of the extremes-^ \*ich composftaon cr

-<<me; bi-^p^ri With each other:

f2a. "'tSe subject has itself gterially" (In I Periherm. lect.8), that is, as receptihle of determination; \rrnhfs^teSj foaally" (ibid.), that is, as a2a- fRp'fcermination or form\* A . . . f A

a2h. Thus in the proposition h^is to receive a a^hl. 'Peter' is first posited as something wh,icn is

tna^auboect the^dete^inationcn^..^'.

\*"ScS£r:ScSrrL^'"aS:rratorS-^ ie oallea .be predicated "or predicate.

b. But when a universal is quantified (i.e. subjected to determination by 'every' or 'some' or the like):

bl. then it is taken according to its relation to the inferiors contained beneath it,

b2. which "pertains to the material determination of the universal": (as when a form is received in a matter or subject it is-materially determined, or limited, by that subject or matter).

b5. And thereby the predicate is made to decline from its "proper character which it has in the enunciation", i.e. from the character of determination or determinant but not of determinable or determined.

c. And this indeed is evident from this, that by quantifying the predicate, it is implicitly and equivalently changed into a subject.

cl. Let us take this example: 'All man is all rational animal':

cla. This proposition:

clal. is not merely an explicitation of this: 'every man is a rational animal',

cla2. but to it adds also this\* 'no non-man is a rational animal': which converted for the elimination of the infinite term 'non-man' becomes this: 'every rational animal is a man', - where 'EVERY rational animal' is a subject, which it could not be by the conversion of the first proposition: 'every man is a rational animal', for the conversion of this would give us: 'SOME rational animal is a man'. (Cf. 223, D).

d. Thus it appears:

dl. That the quantification of the predicate yields a proposition which is equivalently an occultly hypothetic or explicable proposition - an exclusive proposition) (Of. n.207);

^2. For which reason Levi Ben Person (XIV century) writes: "We do not ordinarily add a quantitative sign to the predicate, for were we to do so we would state *tvra 'quaesita'*" (i.e. answers to *tv/o* questions) "at the same time: namely, that the predicate is affirmed of the subject, and that it is denied of everything else."

B. The second reason why the theory of the quantification of the predicate must be rejected appears if we examine those propositions proposed by Hamilton;

a. Let us first take Hamilton's AFFIRMATIVE propositions:

al. The TOTO-TOTAL (a-a) and PARTI-TOTAL (i-a) propositions are FALSE:

ala. For:

alal. P of an affirmative proposition is always particular (n.71, B.a),

ala2. (except in this case of convertible propositions; but this is 'per accidens', by reason of the matter: cf. 223, D).

alb. But if the predicate were taken universally (v.g. 'all rational') as Hamilton would have it in these propositions (a-a and i-a), then,

albl. it is taken as communicable to S (man) according to each of the singulars contained under it;

alb2. so that this would be inferred: 'Peter is all rational (beings)'.

a2. The TOTO-PARTIAL (a-I) and PARTI-PARTIAL (i-i) propositions are AMPHIBOLOGICAL and ILLOGICAL:

a2a. Amphibological indeed, because P does not determine the specific difference; wherefore the proposition may be false according to determination; v.g. 'All man is some animal' is false if 'some animal' is determined to signify 'irrational animal'.

a2b. But illogical, for, as explained above (A), to quantify the predicate is to consider it according to a material consideration, which befits:

a2bl. a subject,

a2b2. but not a predicate.

b. Let us now take Hamilton's NEGATIVE propositions:

bl. The TOTO-TOTAL (e-e) and PARTI-TOTAL (o-e) propositions are USELESS and illogical:

bla. Useless, indeed, because of itself, without a quantitative particle apposed, P in these propositions is universal (n.71, B.b).

bib. Illogical, for the same reason as that given above in regard to a-i and i-i propositions (3, a2b).

ld2. The TOTO-PARTIAL (e-o) and PARTI-PARTIAL (o-o) propositions are AMPHIBOK)GrICAL, as was said above regarding a-i and i-i propositions (B,a2a).

277. FOUNDATION OP THE THEOET: This foundation:

- A. Lies in the consideration of the sign alone in a reasoning or argumentation, not of the concepts:
  - a. And therefore the proposition is regarded:
    - a1. no longer as signifying an identification of S and P,
    - a2. but only as signifying the equality of the extensions of S and P.
  - b. Wherefrom it follows that the syllogism:
    - b1. is not a mode of thinking by which diverse opnpepts and diverse propositions are linked together,
    - b2. but as a sort of mathematical operation performed upon signs (after the manner of algebra).

B. IVherefrom appears the nominalistic inspiration of this theory.

CHAPTER TV/ENTY-FOUR.

THE HYPOTHETICAL SYLLOGISM.

278. ORDER OP PROCEDURE: This treatment of the hypothetical syllogism:

- A. Will consider:
  - ^irst, the hypothetical syllogism in common,
  - b. Secondly, the hypothetical syllogism in special; but since, as will appear, the hypothetical syllogism is of three species, this consideration will be tripartite:
    - b1. In the first place, the disjunctive syllogism will be dealt with;
    - b2. In the second place, the conjunctive syllogism will be treated;
    - b3. In the third place, the conditional syllogism will be considered.
- B. Hence the following order :-

	in common.	Article one.
On the		
hypothetical	The disjunctive syllogism,	Article two.
syllogism:		
	in special	Article three.
	The conditional syllogism...	Article four.

ARTICLE ONE.

THE HYPOTHETICAL SYLLOGISM IN COMMON.

279. NOTION OP HYPOTHETICAL SYLLOGISM: It was said above (n.256) that a categorical syllogism can be composed from three hypothetical propositions. It is otherwise with the hypothetical syllogism.

A. As an example of a CATEGORICAL syllogism consisting of hypothetioal propositions, take this:



'If Peter is rational, he is capable of laughter.  
 But if Peter is a man, he is rational.  
 Therefore if Peter is a man, he is capable of laughter\*.

B. As an example, however, of a HYPOTHETICAL syllogism, take this:

'If Peter is rational, he is capable of laughter.  
 But Peter is irrational.  
 Therefore Peter is capable of laughter\*.

C. Therefore a HYPOTHETICAL SYLLOGISM is: a SYLLOGISM WHEREIN THE MAJOR IS A HYPOTHETICAL PROPOSITION WHEREOF ONE PART INDICATES THE CONCLUSION AND THE OTHER PART INDICATES ITS LOGICAL REASON UPON WHICH IT DEPENDS. AND THE MINOR POSITS OR DESTROYS THIS REASON.

280. **DIVISION OF THE HYPOTHETIC SYLLOGISM:** There are as many species of the hypothetical syllogism as there are species of OVERTLY hypothetic propositions. (Cf. n.207, D).

A. An OCCULTLY hypothetical proposition cannot be the major of a hypothetical syllogism: for since it has only one explicit proposition, there is no room in it to distinguish a minor and a conclusion.

- B. Wherefore the hypothetical syllogism is:
- either CONDITIONAL,
  - or CONJUNCTIVE.
  - or DISJUNCTIVE.

## ARTICLE TWO.

### THE DISJUNCTIVE SYLLOGISM.

281. **DEFINITION OF DISJUNCTIVE SYLLOGISM:** The nature of the disjunctive syllogism is seen:

- A. From some examples:
- Let us take this example:

'Either Peter is truthful, or Paul is a liar.  
 But Peter is truthful.  
 Therefore Paul is not a liar'.

- As a second example, take this:

'Either Peter is truthful, or Paul is a liar.  
 But Peter is not truthful.  
 Therefore Paul is a liar\*.

B. Therefore the DISJUNCTIVE SYLLOGISM is a SYLLOGISM WHEREOF THE MAJOR IS A DISJUNCTIVE PROPOSITION. WHILE THE MINOR POSITS OR DESTROYS ONE PART OF THE DISJUNCTIVE.

282. **FIGURES OF THE DISJUNCTIVE SYLLOGISM:** But since the nature of a disjunctive involves that one part be true and the other false, without the two parts being able to be together true or together false (cf. n.207, G. a2) :

- A. It follows that:
- if the minor affirms (posits) one part, the conclusion must deny (remove) the other,
  - and if the minor denies one part, the conclusion must affirm the other.

B. Wherefore there are two FIGURES of the disjunctive syllogism, taken from the minor and conclusion:

- a. In the former example given above (n.281, A.a.):
  - a1. the minor POSITS one part and the conclusion REMOVES the other;
  - a2. and therefore this figure is called POSITING-REMOVING (POMENDO-TOLLEKS').
- b. But in the latter example above given (n.281, A.b):
  - b1. the minor ^GATES one part and the conclusion AFFIRMS the other;
  - b2. wherefore this figure is called RMOVmG-POSITmG (TOLIENI)Q-P0K^ .

283. MOODS OF THE DISJUNCTIVE SYLLOGISM; But in each figure there are four moods taken from the major.

- A. If both parts of the major are AFFIRMATIVE, then is had the FIRST MOOD;
  - a. Thus:

FIRST MOOD

IN THE FIRST FIGURE (PONENDO-TOLIENS)	IN THE SECOND FIGURE (tollendo ponins)
Either A or B. But A.PONENDO Thefore not B.TOLLENS.	Either A or B. But not A... — tollendo Therefore B.POltefS,

- b. Whereof let us take these examples:

IN THE FIRST FIGURE:	IN THE SECOND FIGURE:
^Either we shall practise austerity, or we shall suffer defeat. But we shall practise austerity. Therefore we shall not suffer defeat.'	'Either we shall practise austerity, or we shall suffer defeat. But we will not practise austerity. Therei*ore we shall suffer defeat*.

- B. If the first part of the major is AFFIRMATIVE and the second part NEGATIVE, then is had the SECOND MOOD:
  - a. Thus:

IN THE FIRST FIGURE	IN the SEqOND FIGURE
Either A or not B. But A.PONENDO Therefore B..TOILENS.	Either A or not B. But not A.TOLIEltDO Therefore not B.PONENS.

- b. Which are illustrated by these examples:

DT THE FmST FIGURE:	IN THE SECOND FIGURE:
'Either we shall practise austerity, or we shall NOT avoid defeat. But we shall practise austerity. Therefore we shall avoid defeat*.	'Either we shall practise austerity, or we shall NOT avoid defeatT* But we will not practise austerity. Therefore we shall not avoid defeat*.

- C. If the first part of the major is NEGATIVE and the second part AFFIPJATIVE. then is had the THIRD MOOD:
  - a. Thus:

IN THE FIRST FIGURE	IN THE second FIGURE
Either not A or B. But not ^ . . PONENDO Therefore not B...TOLLENS.	Either not A or B. But A.TOLLENDO Therefore B...PONENS.

- b. Wliich are illustrated by these examples;

W THE gIRST FIGUHB; *EItlier we shall NOT pi-actise austerity. or we shall avoid defeat. But we •will not -practise austerity. Therefore vre shall not avoid defeat, *	m THE SECOND FIGURE; 'Either we slaall NOT practise austerity, or we shall avoid defeat. But we will practise austerity. Therefore we sha3.1 avoid defeat, '
--	---

D. If both parts of the major are NEGATIVE, then is had the POUBTH MOOD  
a. Thus:

_____ IN THE FIRST FIGURE	POUR ‘ ‘ PH MOOD ~ ~ ~ ~ _____ IN THE SECOND FIGURE
Either not A or not B. But not A,,, — PQNENDO Therefore B,,,TOLLiINS.	Either not A or not B, But A... — TOLLEND0 Therefore not B,,,PQNMS.

b. Which are illustrated from these examples;

IU THE FIRST FIGUHE; 'Either lye shall HOT practise austerity. or we shall HOT suffer defeat. But ire shall not practise austerity. Therefore we shall suffer defeat.'	IN THB SECCND FIGUBE; 'Either v/o shall NOT practise austerity, or we shall NOT auffer defeat. But we will practise austerity. Therefore we shall not suffer defeat.*
--	---

284, REDUCTION OP THE DISJUNCTIVE SYLLOGISM: The reduction of this syllo-  
gism can be made in tv/o ways:

A. Either to a CONDITIONAL SYLLOGISM:  
a, by changing the major into a conditional pioposition.  
b. Thus:  
b1, instead of this: 'Either Peter is truthful, or Paul is a liar\*.  
b2, wo get this: 'If Peter is truthful, Paul is not a liar\*.  
o. Or again:  
c1. instead of this: 'Either we shall practise austerity, or vre ^all  
sviffer defeat\*.  
o2, we get this: 'If we practise austerity, we shall not suffer defeat\*

B. Or to a categorical syllogism, IF THE TV/0 MMBERS HAVE THE SAME  
SUBJECT.  
a. Thus instead of the disjxmctive syllogism given above (n. 283, A.a)  
as an example of the first mood in the first figure, we get this:

'Thosig who practise austerity will not suffer defeat.  
But Y/e shall practise austerity.  
Therefore we shall not suffer defeat.'

b. And;  
b1, instead of this:

'Either the vworld does not exist, or it was created by God.  
But the world exists.  
Therefore it was created by God.\*

b2. we get this:

'That Y/hich (other than God) exists, was created by God.  
But the T/orld (which is other than God) exists.  
Therefore the world was created by God.\*

0. The LMJ is: If the minor does not change the quality of one  
part. the conclusion must change the quality of the other part; if tho  
m-inr>r doos change the Quality of one part, the conclusion must abstain  
from changing the quality of the other part.

## ARTICLE THREE.

## THE CONJUNCTIVE SYLLOGISM.

285. DEFINITION OF CONJUNCTIVE SYLLOGISM: The nature of the conjunctive syllogism:

A. Is seen from this example:

'No man can serve God and Mammon.  
But John serves God.  
Therefore John does not serve Mammon\*.

B. Therefore the CONJUNCTIVE SYLLOGISM is a SYLLOGISM WHEREIN THE MAJOR IS A CONJUNCTIVE PROPOSITION. THE DENIAL OF THE MINOR POSITS ONE PART AND THE CONCLUSION REMOVES THE OTHER.

286. FIGURE OF THE CONJUNCTIVE SYLLOGISM: However, since both parts of a conjunctive can be together false, there is ONLY ONE FIGURE, to wit, POSITIVE-NEGATIVE (TONENDO-TOLLENS), as in the example given above. For from the negation of one part IT FOLLOWS this: 'But John does not serve God'), nothing follows, since John may serve neither God nor Mammon.

287. REDUCTION OF THIS SYLLOGISM: The conjunctive syllogism is reduced to a CONDITIONAL syllogism, thus:

'If John serves God, he does not serve Mammon.  
But John serves God.  
Therefore John does not serve Mammon'.

## ARTICLE FOUR.

## THE CONDITIONAL SYLLOGISM.

288. DEFINITION OF CONDITIONAL SYLLOGISM: The nature of the conditional syllogism, as well as from the preceding example (n.287):

A. Is seen from these examples:

a. Let us take this example:

'If Henry is reading the Bible, he can read.  
But Henry is reading the Bible.  
Therefore Henry can read\*.

b. Let this be a second example :

\* If Henry is reading the Bible, he can read.  
But Henry cannot read.  
Therefore Henry is not reading the Bible\*.

B. Therefore the CONDITIONAL SYLLOGISM is a SYLLOGISM WHEREIN THE MAJOR IS CONDITIONAL. EITHER THE MINOR POSITS OR DESTROYS THE REASON.

289. PRINCIPLE AND LAWS OF THIS SYLLOGISM: The conditional syllogism has as:

A. Its SUPREME PRINCIPLE the same principle as every argumentation, to wit: IN EVERY GOOD CONSEQUENCE. THE ANTECEDENT CANNOT BE TRUE WITHOUT THE CONSEQUENT BEING TRUE. BUT NOT CONVERSELY. (Cf. n.248).

B. Wherefrom follow four LAWS:

a. FIRST LAW: THE CONDITION (i.e. the antecedent) BEING POSITED. THE CONDITIONED (i.e. the consequent) IS POSITED. - as in the former example above (n.288, A.a).

b. SECOND LAW: THE CONDITIONED (i.e. the consequent) BEING POSITED. NOT THEREBY IS THE CONDITION (i.e. the antecedent) POSITED. Thus if in the above examples (n.288):

b1. the minor were this: 'But Henry can read\*.

b2. this would not follow: 'Therefore he is reading the Bible'; for he may be able to read without reading the Bible.

c. THIRD LAW: THE CONDITIONED BEING DENIED. THE CONDITION IS DENIED, - as in the latter example above (n.288, A.bJ).

d. FOURTH LAW: THE CONDITION BEING DENIED. NOT THEREBY IS THE CONDITIONED DENIED. Thus if in the above examples:

d1. the minor were this: 'But Henry is not reading the Bible',

d2. this would not follow: 'Therefore he cannot read': for he may be not reading the Bible, and yet be able to read.

O. THESE LAWS ARE EVIDENT, if attention be paid to the supreme law of every argumentation.

a. Sometimes indeed it may seem that the second and fourth laws are false;

b. but this is so only because, frequently in common usage, a second conditional is thought, but left unexpressed: 'and if\* he is reading the Bible^ he cannot read': then, from this second conditional. - not from the first - are these syllogisms:

b1. 'But he is not reading the Bible; therefore he cannot read'. But in this case, the minor is not removing (fourth law), but POSITS the condition (first law).

b2. 'But he can read; therefore he is reading the Bible'. Here the minor is not positing, (second law), but DENIES the conditioned (third law).

290. FORMS OF THE CONDITIONAL SYLLOGISM: It follows:

A. That there are TWO legitimate FIGURES of the conditional syllogism: taken from the minor and the conclusion;

a. If the minor posits the condition, - in which case the conclusion posits the conditioned - then is had the FIRST FIGURE, which is called the figure POSITING - POSITING (PONENDO-PONENS).

b. But if the minor destroys the conditioned, - in which case the conclusion destroys the condition - then is had the SECOND FIGURE, which is called the figure REMOVING-REMOVING (TOLLENDOTOT.T.mq'^).

B. But in each of these figures there are FOUR MOODS taken from the major.

a. If both parts of the major are AFFIRMATIVE, then is had the FIRST MOOD:

a1. Thus:

IN THE FIRST FIGURE  
(ponendo-ponens)

If A, then B.  
But A.PONENDO  
Therefore... B... PONENS.

IN THE SECOND FIGURE  
(TOLLENDOTOLLENS)



If...A, then B.  
But not B...TOLLENDOTOLLENS.  
Therefore not A.TOLLENS.

a2. Which are illustrated by these examples;

IN THE FIRST FIGURE	IN THE SECOND FIGURE
<b>*If</b> Paul is working hard. he is getting a high income. But Paul is working hard. Therefore Paul is getting a high income*.	<b>*If</b> Paul is working hard. he is getting a high income. But Paul is not getting a high income. Therefore Paul is not working hard*.

b. **I**f the condition in the major is AFFIRMATIVE. but the conditioned NEG-ATIVE. then is had the SECOND MOOD;  
b1. Thus:

SECOND MOOD


IN THE FIRST FIGURE	IN THE SECOND FIGURE
If A, then not B. But  - - PONENDO <b>Therefore not B...</b> .FONENS.	<b>If .A,</b> then not B. <b>But .B</b> - .TOIJENDQ Therefore not  - .TOLLENS.

b2. Which are illustrated by these examples:

IN THE FIRST FIGURE	IN THE SECOND FIGURE
<b>*If</b> Paul is working hard, he is not in debt. But Paul is working hard. Therefore Paul is not in debt'.	<b>*If</b> Paul is vworking hard. he is not in debt. But Paul is in debt. Therefore Paul is not working hard*.

c. **I**f the condition in the major is NEGATIVE, but the conditioned is AFFIPMATIVE. then is had the THIRD MOOD;  
c1. Thus;

THIRD MOOD



IN THE FIRST FIGURE	IN THE SECOND FIGURE
If not A, then B. But not  - - PONENDO <b>Therefore .B...</b> .PONENS.	If not A, then B. <b>But not B.</b> .IOLLE^O <b>Therefore .A...</b> .TOLIJBN3.

c2. Which are illustrated by these examples;

IN THE FIRST FIGURE	IN THE SECOND FIGURE
<b>*If</b> Paul is not working hard, he is in debt. But Pavil is not working hard. Therefore Paul is in debt*.	<b>*If</b> Paul is not working hard, he is in debt. But Paul is not in debt. Therefore Paul is vworking hard*.

d. **I**f both parts of the major are NEGATIVE, then is had the FOURTH MOOD;  
d1. Thus:

FOURTH MOOD

IN THE FIRST FIGURE	IN THE SECOND FIGURE
If not A, then not B. But not  - .PONENDO <b>Therefore not B..</b> .PONENS.	If not A, then not B. <b>But .B</b> .IQLLENDQ Therefore.. -  - TOLLENS.

d2. Which are illustrated by these examples;

IN THE FIRST FIGURE

\*If Paul is not working hard,  
he is not getting a  
high income.  
But Paul is not working hard.  
Therefore Paul is not getting  
a high income.

IN THE SECOND FIGURE

\*If Paul is not working hard. he is not  
getting a high income.  
But Paul is getting a high income.  
Therefore Paul is working hard\*.

291. RESOLUTION OF CONDITIONAL SYLLOGISMS TO CATEGORICAL SYLLOGISMS: It is  
sometimes said that the conditional syllogism is reduced to the  
categorical syllogism.

A. Let us take as an example:

a. this conditional syllogism:

'If Peter is a martyr, he is a saint.  
But Peter is a martyr.  
Therefore Peter is a saint\*.

b. Now:

b1. Let us construct a categorical syllogism whose MAJOR is a universal  
proposition having:

bla. as its S the predicate of the condition.

bib. and as its P the predicate of the conditioned.

b2. Then we get this categorical syllogism:

'Every martyr is a saint.  
But Peter is a martyr.  
Therefore Peter is a saint'.

c. But this categorical major expresses ANOTHER TRUTH than does the  
conditional major given above.

c1. For indeed the conditional syllogism is not reducible to a  
categorical syllogism as the moods of the other figures in the categorical  
syllogism are reduced to the moods of the first figure, i.e. as the  
imperfect to the perfect IN THE SAME GENUS (of. n.269).

c2. Rather it constitutes an illation OF ANOTHER SPECIES,

B. In order to see this:

a. Let us take as example a conditional syllogism wherein the two  
parts of the major have not the same subject:

'If the world exists. God exists.  
But the world exists.  
Therefore God exists'.

b. Here the operation performed above is impossible.

C. Therefore conditional syllogisms are resolved into categorical  
syllogisms:

a. Either in the manner indicated above (A.b), - which can be  
done when both parts of the major have the same subject.

b. Or by resolving the conditional syllogism into two conditional  
syllogisms each of which has a major whose two parts have the same subject.

b1. Thus the conditional syllogism given just above (B.a) is resolved  
thus:

FIRST CONDITIONAL SYLLOGISM;  
'if the world exists, it was  
created by God.

But the world exists.

Therefore the world was  
created by God'.

which is in turn  
resolvable into

CATEGORICAL SYLLOGISM;  
\*That which exists (without  
being God) was created  
by God.

But the world exists  
(without being God).

Therefore the world was  
created by God'.

SECOND CONDITIONAL SYLLOGISM:  
'If God created the world.  
God exists.

But God created the world.  
Therefore God exists\*.

which is in turn  
resolvable into

CATEGORICAL SYLLOGISM:  
'He idrio created the world  
exists.  
But God created the world.  
Therefore God exists'.

D. Indeed:

a. By these operations have been destroyed:

a1. both the unity of the conditional syllogism,

a2. and that which constitutes its proper nature.

b. Wherefrom it appears that the conditional syllogism:

b1. is a syllogism OF ANOTHER SPECIES than the categorical syllogism,  
and is not properly reducible to it.

b2. and contains VIRTUALLY in its unity either one or two categorical  
syllogisms.

c. And this indeed:

c1. follows from what was said above (n.207, E.aS), to wit, that the  
conditional proposition expresses a truth of another species than does a  
categorical proposition, namely, truth from a supposition.

c2. Vherefrom it follows that a conditional syllogism expresses an  
illation OF ANOTHER SPECIES than does a categoric syllogism.

c2a. For the categoric syllogism infers a conclusion from the connexion  
of TERMS, concluding from a universal truth to a universal truth, or, in  
other words, leading to a conclusion ABSOLUTELY true.

c2b. But the conditional syllogism infers its conclusion from the  
connexion of PROPOSITIONS:

c2b1. for the conclusion of a conditional syllogism is not valid,  
unless there be a connexion between the condition and the conditioned.

c2b2. And therefore this syllogism reaches a conclusion which is true  
UNDER A CONDITION, - just as a conditional proposition "affirms some-  
thing to be true from a supposition" (n.207, E.aS).

E. And therefore:

a. Since the connexion of propositions presupposes the connexion of  
terms. logically the conditional syllogism presupposes the categorical  
syllogism.

b. For which reason:

b1. Goblot (Traite de Logique, nn,98, 112, 118, 120, 153-159) and  
Rougier (Structures des Theories Deductives, pp.6ss), err, when, attempting  
to reform the ancient logic of Aristotle, they endeavour to construct a  
universal theory of the conditional syllogism.

b2. As is well shown by Maritain: **'...that** the argumentation  
founded upon a categorical Major must **itself** be necessarily other than the  
argumentation founded upon a conditional Major,

b2a. **'...by** no means signifies that the conditional syllogism  
indicates our possession of another logic and other laws of thought than  
those upon which the categorical syllogism depends. In fact, on the contrary,  
the conditional syllogism presupposes the categorical syllogism just as the  
conditional proposition presupposes the categorical proposition. The reason  
that it does not consist in establishing the union or connection of a Pr. to  
a S by means of a third term is, that this union or connection is already made,  
already given, in one of the members of the compound proposition which acts as  
the Major in the conditional reasoning. Therefore there are no grounds for  
seeing in the conditional syllogism a mode of reasoning that escapes the Logic  
of 'inherence' or 'predication', that is to say, the Logic which recognizes  
that we can neither judge nor reason without attributing or refusing a Pr.



to a S. The categorical proposition consists in this attribution itself, and the hypothetical or compound proposition which unites two categorical propositions, supposes this attribution as already made.

b2b. "The categorical syllogism orders discourse according to the connection of TERMS. From an antecedent that reveals in a third term the means by which, or the reason for which, two terms should be united to (or separated from) each other, it deduces or infers the proposition that unites these two terms to one another (or separates them). Thus it concludes, at least in so far as logical relations are concerned, from a more universal truth to a less universal truth contained in it.

b2c. "In order that these notions be applicable as such to the conditional syllogism, the latter must be resolved into the categorical syllogism, or the categorical syllogisms, which it contains virtually. But these notions as such are not applicable to the conditional syllogism considered in itself and in its proper nature. So we may say that the conditional syllogism and the categorical syllogism are alike in this: that both have as their object the manifestation of the truth of a conclusion by the resolution of the latter into the first principles of intelligibility, but that they differ in the following characteristics: in conditional reasoning the mind does not apprehend a Minor under the dependence of another preposition as it does in categorical reasoning; it apprehends a Minor under the dependence of a connection of propositions of which this Minor is one of the members. The conditional syllogism orders discourse according to the connection of PROPOSITIONS; from an antecedent which sets forth (in the conditional Major) the connection of two propositions (the sequence), and which presents one of these two propositions as the means or the reason for positing (or destroying) the other, it deduces or infers the position (or destruction) of this other. Hence it is no longer question of manifesting the union (or separation) of two terms to each other by means of a third term or concept, but of manifesting by means of one of the members of the Major the necessity of positing or destroying the other member. Consequently the conditional syllogism does indeed conclude from the whole to the part; but not, as in the categorical syllogism, from a more universal (from the point of view of the logical relations that exist between the connected terms) to a less universal truth, but from a compound proposition to one of the members which it contains. The mind, in the conditional syllogism, does not infer one proposition from another, it infers a proposition from an inference that has already been made and affirmed between two propositions. The need is not to see by a new light and in virtue of an inference which the mind discovers while it affects it, rather it is to affirm or deny something by a renewed application of an already existing light and by the use of a previously made inference.

b2d. "It must be borne in mind, however, that the conditional syllogism may be resolved into the categorical syllogism, and that just as the union of propositions to each other presupposes the union of terms, so does the logical mechanism of the conditional syllogism presuppose the logical mechanism of the categorical syllogism.

b2e. "And that is the fundamental reason why Aristotle neglected to treat of the theory of the conditional syllogism and why those modern logicians, who think to have found in this theory the means of renovating Logic, are completely mistaken. The conditional syllogism is not a primary process of the reason; this manner of inferring a proposition, not from another proposition, but from a previously affirmed sequence between two propositions is, so to speak, a reasoning in the second degree, grafted upon the categorical syllogism which is the sole truly primary form of rational discourse: 'If this figure inscribed in a semi-circle is a triangle, the sum of its angles is equal to two right angles, therefore, etc.' - Granted. - But why is this conditional Major true? Because the sum of the angles of a triangle is equal to two right angles. 'If the human intelligence is independent of matter in its specific operation, it is independent of matter in its being; but, etc.'. Why is this conditional Major true? Because independence of matter in the order of operation necessarily implies independence of matter in the order of being; in other words, because this categorical Major is true: 'Everything independent of matter in its specific operation is independent of matter in its being.' In order to give the reason for a conclusion we must always definitively attain to an essence or a universal nature, that is, to a categorical syllogism (or to an induction in the experimental sciences)." (Maritain: Introduction to Logic, pp.242-245).

P. The POTNDATION of this error made by Groblot and Rougier is the confusing of the universal and a collection, from which confusion the value of the categorical syllogism perisiffis (cf. n.272).

a. But, the value of the categorical syllogism being denied, there remains no other way to retain the value of the syllogism save recourse to the conditional syllogism.

b. However, it is impossible to reduce all deductions to conditional syllogisms save by proposing categorical syllogisms disguised as conditional:

b1. Thus wrongly would the following syllogism be regarded as conditional:

\*If two triangles have parallel sides, they are similar.  
But triangles ABC and PEP have parallel sides.  
Therefore triangles ABC and PEP are similar'.

b2. Por this is a categorical syllogism:

b2a. Por it is equivalent to this syllogism:

'Two triangles having parallel sides are similar.  
But triangles ABC and PEP have parallel sides.  
Therefore triangles ABC and PEP are similar\*.

b2b. Such a syllogism is categoric, for the illation is based upon identification:

b2b1. of P (similar),

b2b2. and of S (triangles ABC and DEP),

b2b3. with M (two triangles having parallel sides).

b3. But the following syllogian would be truly conditional:

'If triangles ABC and DEP have parallel sides, they are similar.  
But triangles ABC and DEP have parallel sides.  
Therefore triangles ABC and DEP are similar'.

b4. Por not identical are these propositions:

b4a. 'If a triangle has sides parallel to another — ' ,

b4b. 'If triangle ABC has sides parallel to another — ' ,

## CHAPTER TWENTY-PIVE.

### OTHER DIVISIONS OP THE SYLLOGISM.

292. ORDER OP PROCEDURE: So far we have dealt with the essential division of the syllogism properly so-called.

A. Here, accordingly, we shall deal with:

a. First, accidental divisions of the syllogism both categoric and hypothetical.

b. Secondly. the syllogism improperly so-called.

B. Hence the following order :-

Accidental **divisions.....Article** one.  
Other divisions of  
the syllogism:

The s3rlllogism improperly so-called.**Article** two.

## ARTICLE ONE.

## ACCIDENTAL DIVISIONS OF THE SYLLOGISM.

293. **FOUNDATION OF ACCIDENTAL DIVISIONS:** The accidental divisions of the syllogism - which are common to the categorical and hypothetical syllogism - have as their foundation:

A. Either the proximate matter, i.e. the propositions: (which divisions will be treated in n.294).

B. Or the remote matter, i.e. the terms: (which division will be exposed in n.295).

C. Or the argumentation itself: (which divisions will be expounded in n.296).

294. **DIVISIONS ON THE SCORE OF PROXIMATE MATTER:** These divisions are on three heads:

A. On the score of the quality of the conclusion, a syllogism is:  
a. either AFFIRMATIVE. - if the conclusion affirms;  
b. or NEGATIVE, - if the conclusion denies.

B. On the score of predication, a syllogism is:  
a. either ABSOLUTE, - if the propositions are simply attributive (or of in-be);  
b. or MODAL. - if the propositions are modal. (Cf. n.208, B).

C. On the score of integrity, a syllogism is:  
a. either COMPLETE. - if all the premisses are expressed;  
b. or INCOMPLETE, - if one premiss remains unexpressed; and in this case the syllogism is called an ENTHYME.

295. **DIVISION OF THE SCORE OF REMOTE MATTER:** This division is on the score of the terms:

A. As an example:  
a. let us take this syllogism:

'An animal is mortal.  
But man is an animal.  
Therefore man is mortal'.

b. Here:  
b1. all the terms are in the direct (nominative) case. (Cf. n.66, B).  
b2. Wherefore this syllogism is called a DIRECT syllogism.

3. But sometimes one or another term of a syllogism is in an oblique case, i.e. it is not S or P of a proposition but has a relation with the S or P.

a. Let us take this example:

'Christ is God.  
But Mary is the MOTHER of Christ.  
Therefore Mary is the MOTHER of God. '

b. Here:  
b1. M (Christ):  
b1a. in the major is direct,  
b1b. but in the minor is oblique.  
b1c. and determines P of the major (God), -wherein in the major is direct to be oblique in the conclusion.  
b2. Therefore this syllogism is called an OBLIQUE syllogism.

296. DIVISION ON THE SCOPE OF THE ARGUMENTATION ITSELF: On the score of the argumentation itself, a syllogism is:

A. Either SIMPLICITER. - if it consists of three propositions only, as in all the examples so far given.

B. or COMPOUND. - if it consists of more than three propositions.

a. Let us take these examples:

a1. First example;

'Every martyr is a saint, because he has heroic charity.  
But Peter is a martyr.  
Therefore he is a saint'.

a2. Second example;

'Every spiritual substance is a simple substance.  
But human soul is a spiritual substance.  
Therefore human soul is a simple substance.  
But every simple substance is incorruptible.  
Therefore human soul is incorruptible'.

a3. Third example;

'Peter is a man.  
But every man is an animal.  
But every animal has instincts.  
But everything endowed with instincts has spontaneous reactions.  
Therefore Peter has spontaneous reactions'.

a4. Fourth example; Let this example be the famous argument of Tertullian against the Emperor Trajan, who, when Pliny sought from him a ruling as to whether the Christians ought to be searched out and tried at his tribunal, replied: 'Do not seek them out; but if they are brought before your tribunal, condemn them': Tertullian argued thus:

'The Christians are either harmful, or harmless.  
But if they are harmful, your decree is unjust; (to the state);  
but if they are harmless, your decree is unjust. (to the Christians).  
Therefore in either case, your decree is unjust'.

b. All these syllogisms are COMPOUND: however they are of diverse species:

b1. In the first example, the composition consists in this, that the major contains its proof. A SYLLOGISM IN WHICH ONE PREMISE. OR EACH PREMISES. CONTAINS ITS PROOF, is called an EPICHEIRIME.

b2. In the second example the CONCLUSION OF ONE SYLLOGISM IS THE MAJOR OF THE NEXT; wherefore this is called a POLYSYLLOGISM.

b3. In the third example THERE ARE MANY MINORS; wherefore it is called a SORITES.

b3a. But note:

b3a1. that in the example given above;

b3a1a. S of the conclusion is S of the first proposition,

b3a1b. P of the conclusion is P of the last antecedent proposition;

b3a1c. M is successively:

b3a1c1. P of the first proposition and S of the second;

b3a1c2. P of the second proposition and S of the third;

b3a1c3. P of the third proposition and S of the fourth; and so on.

b3a2. Such a sorites is called the ARISTOTELIC SORITES.

b3b. But GOCLENIUS (Goclenius: 1547-1628) constructed another sorites, in which the terms in all the propositions are disposed according to the first figure: thus:

'Everything <sup>enc.C7/ed</sup> with instincts has spontaneous reactions.  
 But every animal has instincts.  
 But every man is an animal.  
 But Peter is a man.  
 Therefore Peter has spontaneous reactions'.

hSc. That the difference between these two sorites may appear the more clearly, they may be thus shown schematically

SORITES	
OF ARISTOTLE	OF GOECKEL
Peter is a man,	Everything endowed with instincts HAS SPONTANEOUS REACTIONS.
Man is an animal.	Every animal has instincts.
An animal has instincts.	Every man is an animal.
Everything endowed with instincts HAS SPONTANEOUS REACTIONS.	Peter is a man.
Therefore Peter HAS SPONTANEOUS REACTIONS.	Therefore Peter HAS SPONTANEOUS REACTIONS.

b4. In the fourth example THE MAJOR IS A DISJUNCTIVE PROPOSITION TO WHICH THE TWO PARTS ARE SUCCESSIVELY SUBMITTED AS MINORS. FROM WHICH THE SAME CONCLUSION FOLLOWS: which syllogism is called a DILEMMA (or, if there be three parts of the major and accordingly three minors, a TRILEMMA, and so on).

b4a. In order that a dilemma be legitimate, the disjunctive must be complete, and the consequent must follow legitimately and exclusively.

b4a1. The following is not a legitimate dilemma, because the disjunctive is not complete:

'Every philosopher is either an innatist or a sensualist.  
 But if an innatist, he flies in the face of evidence;  
 but if a sensualist, he flies in the face of evidence.  
 Therefore every philosopher flies in the face of evidence'.

b4a2. But the following offends by illegitimacy of consequent:

'Either the books of the library of Alexandria contain the same as the Koran, or they do not contain the same.  
 But if the same, they are USELESS ——— (ILLEGITIMATE CONSEQUENT  
 but if not the same, they are BAD ——— . (ILLEGITIMATE CONSEQUENT  
 Therefore they ought to be burnt'.

b4a3. But in the following example:

b4a3a. the CONCLUSION IS NOT EXCLUSIVE, wherefore the dilemma can be retorted:

'You will rule the state either well or ill.  
 But if well, you will incur the disfavour of the people;  
 but if ill, you will incur the disfavour of God.  
 Therefore in either case you will incur disfavour'.

MaSb. Which is thus retorted:

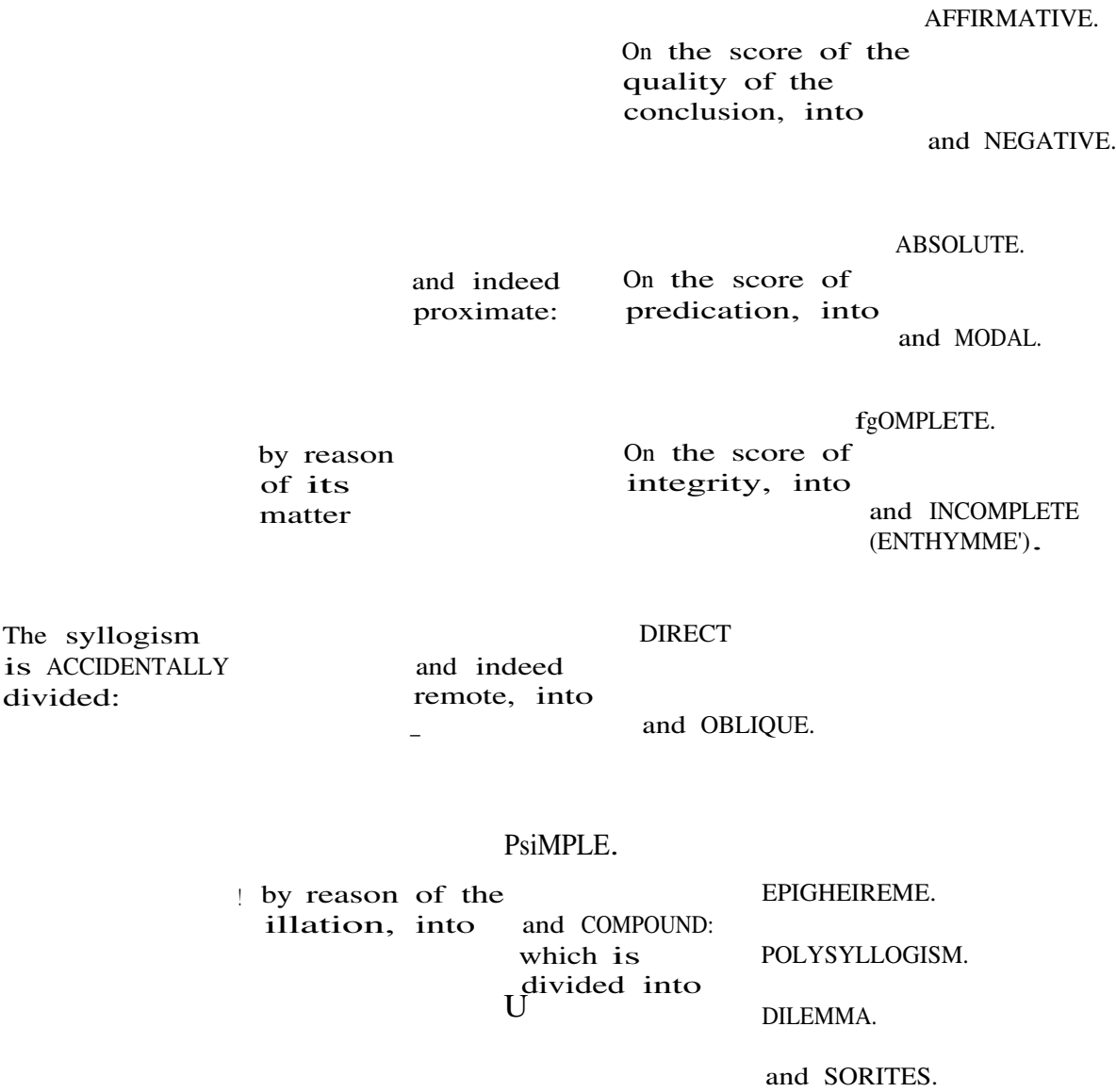
\*I shall rule the state either well or ill.  
But if well, I shall win favour with Gk>d;  
but if ill. I shall win favour with the people.  
Therefore In either cas^ I shall •'ffin favour'.

b4b. Care is to be taken:

b4b1. not to confuse a dilemma with a disjunctive sylloKism. even if the latter have the appearance of a dilemma.

b4b2. For from a disjunctive syllogism not the same conclusion follows from each part of the disjunctive proposition. (Cf. n.281).

297. SCHMATIC SUMMARY: Accordingly the syllogism is AGCIDEOTALLY divided as thus shown schematically:-



ARTICLE TWO.

THE SYLLOGISM IMPROPERLY SO-CALLED.

298. NOTION AND DIVISION OP SYLLOGISM IMPROPERLY SO-CALLED: In every syllogism properly so-called from one truth is inferred ANOTHER ITIUTH. (nn.241-242, 255^

A. Therefore whenever by a syllogism there is not inferred a NEW TRUTH, this is a syllogism improperly so-called.

- B. The syllogism so-called is twofold, to wit:  
 a. the expository syllogism,  
 b. and the explicative syllogism.

299. THE EXPOSITIONAL SYLLOGISM: Let us take:

- A. This example;  
     'Judas betrayed Christ.  
     But Judas was an apostle.  
     Therefore an apostle betrayed Christ'.
- B. This is an EXPOSITIONAL syllogism or syllogism of exposition.  
 L, M IS SIMILAR (Not particular),  
 b. and therefore there is no passage from one truth to another.
- C. Here there is not truly an illation;  
 a. because the principle 'SAID OF EVERY, SAID OF NO' (dictum de omni, dictum de nullo), which every true illation supposes, (since every genuine illation has a universal objective concept as its M), has here no place.  
 b. The expository syllogism is immediately regulated by the principle of triple identity or of the separating third (cf. n.257, A.b).
- D. "The expository syllogism:  
 a. "is not truly a syllogism,  
 b. "but is rather a certain sensible pointing-out or an analysis made to the senses for this purpose, that the consequence, which is true according to intellectual knowledge, be declared in a sensible" (medium). (De natura syllogismorum: a work long apocryphally attributed to St Thomas).  
 c. "In this case, the syllogistic form plays the same role as does the material object or the diagram drawn upon the blackboard as a help in certain demonstrations." (Richard: Philosophie du Raisonnement, p.363).
- E. Although it can be constructed according to all the figures, yet its most perfect figure is the third (n.BSG, C);  
 a. in which M is truly subjected,  
 b. which is proper to the individual, (to which it is not proper to be attributable as a predicate).
- P. As regards its moods: (note that in the expository syllogism A signifies a singular affirmative, and E a singular negative):  
 a. In the second figure (cf. n.266, C):  
     a1. besides the negative moods,  
     a2. it has also four legitimate affirmative moods, (whereof the premisses are AA, II, AI and IA).  
 b. But in the third figure only two moods rightly conclude, to wit, whose premisses are M and EA.

300. THE EXPLICATIVE SYLLOGISM: From the expository syllogism must be distinguished:

- A. The explicative syllogism:  
 a. Whereof this is an example:  
     'Man is mortal.  
     But a rational animal is a man.  
     Therefore a rational animal is mortal'.
- b. Here;  
 b1. M is universal, and therefore there is a true illation.  
 b2. Nevertheless, it is NOT a syllogism PROPERLY SO-CALLED, because it does NOT infer in the conclusion another truth, i.e. a judgment other than in the premisses.
- B. For here:  
 a. The conclusion:

- al. expresses the same truth.
- a2. but explicates it BY 'OTHER CONCEPTS.
- b. For:
  - hi. these two propositions:
    - bla. 'man is mortal'.
    - bib. '\*rational animal is mortal',
  - b2. express the same truth,
  - b3. but the latter expresses it by more distinct concepts than the farmer.
- c. Wherefore to this is rightly given the name of EXPLICATIVE syllogism.

C. In the explicative syllogism:

- a. the conclusion:
  - al. is IDENTICAL AS REGARDS ITSELF (quoad se) with the major,
  - a2, but NOT AS REGARDS US (non quoad nos);
- b. And therefore:
  - bl. there is a formal illation,
  - b2. but not an objective illation. (Cf, Schultes: Introd. ad Historiam Dogmatum).

D. OBSERVE that the major and the conclusion of an explicative syllogism are in THE SAME MODE OF SAYING 'PER SE\*' (cf. nn.230-232); otherwise there would be had, not an explicative syllogism, but a syllogism PROPERLY SO-CALLED.

- a. In the example given above (A.a), both these propositions are IN THE SECOND MODE of saying 'per se\*.
- b. But the case is otherwise:
  - bl. with this syllogism:

\*A rational animal is capable of science.  
But man is a rational animal.  
Therefore man is capable of science\*.

- b2. Here:
  - b2a. The major is in the FOURTH mode of saying 'per se\* : otherwise the syllogism would be employed to no purpose.
  - b2b. But the conclusion is in the SECOND manner of saying 'per se\*.
- c. Wherefore this is a syllogism properly so-called.

### SECTION THREE.

#### INDUCTION.

#### CHAPTER TWENTY-SaC.

#### INDUCTION.

301. ORDER OF PROCEDURE: This chapter on induction - constituting the section on induction - :

- A. Will consider:
  - a\* First. the nature of induction.
  - Secondly, the division of induction.
  - e.^Thirdly^^mpgrfeot--induction.



B. Hence the following order

Its <b>nature</b> .	Article one.
On induction Its <b>division</b> .....	Article two.
As <b>imperfect</b> ..	Article three.

#### ARTICLE ONE.

#### NATURE OF INDUCTION.

302. **IMPOSSIBILITY OF REACHING SYLLOGISTICALLY A UNIVERSAL CONCLUSION FROM PARTICULAR OR SINGULAR PREMISES; Let us take;**

A. this syllogism;

'Man is mortal.  
But Peter is a man.  
Therefore Peter is mortal'.

a. By interchanging the major and the conclusion, this syllogism does not become this;

'Peter is mortal.  
But Peter is a man.  
Therefore man is mortal'.

b. because in the conclusion S (man) has a greater extension than in the minor. (Cf. n.71, B.a).

B. Rather;

a. the conclusion then ought to be: 'SOME man is mortal\*.

b. Then again, this is a syllogism improperly so-called, to wit, an EXPOSITORY syllogism. (Cf. n.299).

C. Wherefrom it appears that, by means of a syllogism, it is impossible that a universal conclusion follow from particular or singular premisses, according to the rule: 'the conclusion always follows the worse part' (n.259, B.c). For the syllogism, as has been repeatedly said, does not deduce a universal conclusion save from a universal.

303. **THAT ARGUMENTATION IS MATERIALLY GOOD; Nevertheless;**

A. To consider again that argumentation given above (n.302, A.a), to wit:

'Peter is mortal.  
But Peter is a man.  
Therefore man is mortal'.

B. This argumentation is materially good because Peter is mortal ON ACCOUNT OF HIS NATURE composed. as it is, from soul and body:

a. for man is composed from soul and body;

b. and therefore the reason on account of which Peter is mortal is found in every man;

c. and thus by reason of the matter of this argumentation it is rightly concluded: 'Man is mortal\*.

304. **ANOTHER MODE OF REASONING; But one who does not know the reason on account of which Peter is mortal, but only observes experimentally that**

many men, to wit, not only Peter, "but also James. John. Oeoilia. Agnes, etc, die, londerstands, on account of the OQNSTANCY of the fact, that there is found in these individuals some common (universal) factor which is the reason of death. But this one factor is human nature, "by virtue of which they are men. And therefore he he reasons thus:

\*Peter, James, John, Cecilia, and Agnes are mortal.  
But the universal which is in Peter. James. John. Cecilia and Agnes,  
is man.  
Therefore man is mortal\*. Let us designate this reasoning as (1).

A. This reasoning differs ESSENTIALLY from the syllogism LATENT in the exaunple given above (n.303. A), in virtue of which that example was materially good: which latent syllogism is this:

'Everything composed from soul and body is mcortal.  
But m^ is composed f^rom soul and bod\*^  
Therefore man is mortal\*. Let us designate this syllogism as (2).

a. Now:  
a1. In the syllogism (2), the major expresses this, that some concept (P) agrees with another concept (S of the major);  
a2. But in that reasoning (1), the major says that the same concept (p) agrees:  
a2a. not with some concept,  
a2b. but distributively with many individuals (S of the major).

b. But:  
b1. In the minor of the syllogism (2) P of the minor is affirmed of another concept (S of the minor);  
b2. whereas' in the minor of that reasoning (1):  
b2a. there is affirmed the agreement of some concept (P of the minor) with the same concept which IS IN Peter, James, John etc, to wit, HUMAN NATURE. #  
b2b. and that concept (P of the minor: 'man') is predicated of human nature which is in Peter, James, John etc.

B. Wherefrom it appears that:  
a. In the syllogian (2), there is an M ('composed from soul and body'),  
b. Whereas in that other reasoning (1) there is not an M (middle term),  
b1. For in the major is found an enumeration of parts (subjective parts: cf. n.190,D).  
b2. for which there is substituted in the minor a universal standing for or representing these parts.  
c. In other words:  
c1. V/hereas in the syllogism (2), there is a middle TERM.  
c2. In that other reasoning (1) there is no middle TEEIM:  
c2a. but that which takes the place of the middle term, v/hich is the MEAN of argumentation, is not a term or a concept, but an ENUMIRATION OF INDIVIDUALS OR OF PARTS:  
c2a1. which individuals or subjective parts are taken in the major distributively (i.e. one by one),  
c2a2. while in the minor they are taken in the linity of the universal concept which represents or stands for them.

305. DEFINITION OP INDUCTION; This manner of reasoning;

A. Which therefore is FORMALLY diverse from the syllogism:  
a. is called INDUCTION.  
b. which essentially consists in a PASSAGE OF THE MIND FROM PARTS TO A UNIVERSAL WHOLE (cf. n.180, P).

B. Therefore INDUCTION is defined; PROGRESSION OF THE MIND FROM SINGULARS SUFFICIENTLY ENUMERATED TO A UNIVERSAL.

a. An enumeration is said to be sufficient;  
a1. when it is such as to permit passage from the parts to the whole.

a2. It is diverse according to diverse matters (i.e. it varies according to the case).

b. Therefore:

hi. Whereas:

hla. The syllogism REMAINS in the intelligible order, or on the plane of concepts or of universals^ - being a passage from universal to universal,

bib. Induction, on the other hand, is an INTRODUCTION from the sensible order to the intelligible order, or a passage from the plane of singular sensibly observed facts to the plane of concepts or of universals.

b2. 'Which is vrell explained by Maritain:

b2a. "This difference has its roots in the very nature of our mind, which cannot attain to truth except it base itself upon two kinds of essentially different principles:

b2a1. '\*upon sense data"and singular facts known through sense experience - material principle of all our knowledge (from which aG-l our knowledge is derived);

b2a2. "upon self-evident, self-known intelligible truths - formal principles of all our knowledge ('first principles' by which all our knowledge is demonstrated)."

b2b. now;

b2b1. "To show how a conclusion derives from previously known universal truths, or in the terminology of the ancients, to 'resolve' a conclusion into the intelligible truths upon which it depends (and finally into the self-evident truths) is to proceed by the deductive or syllogistic method (resolutio formalis).

b2b2. "To show how a conclusion is disengaged, so to speak, from sense experience, in other words, to resolve a conclusion into the facts from which our mind extracts it as from a matter (resolutio materialis) is to proceed by the inductive method."

b2c. Accordingly:

b2c1. "In the syllogism we remain upon the intelligible plane, we move from one point of this plane to another, as a su'braarine that navigates horizontally upon the surface of the ocean.

b2c2. "By induction we attain to the intelligible plane, we move from the sensible plane to the intelligible plane, as a submarine that navigates vertically upwards from below.

b2d. "It is in this sense that Aristotle and St Thomas teach that:

b2dl. "we have but Wo means, of acqiiring knowledge: viz. ;

b2dla. "the syllogism, which proceeds from universal truths,

b2dlb. "and induction v/hich proceeds from siringular data;

b2d2. "for all our knowledge:

b2d2a. "depends formally upon first self-evident truths,

b2d2b. "and derives its origin materially from the singular and concrete reality perceived by the senses." (Maritain; Introduction to Logic, pp.258-259).

C. NOTE that the above definition of induction is taken from its principal or absolutely first function, which is to ASCEND, i.e, to infer a universal truth from singulars, or, in other words, to proceed from the parts to the whole.

a. But it is to be observed that induction - and in this reversibility also it differs from the syllogism - may DESCEND from the intelligible to the sensible, from the whole to the parts, from the universal to the singular, - just as the submarine which RISES UIWARDS from below to the surface may also GO DOWWARDS from the svirface to below.

al. This ii'reversibility of the syllogism is due to its impotence to infer a more universal conclusion from a less universal premiss (cf. n.302).

a2. But induction is reversible:

a2a. because its minor affirms the identity of a universal whole considered in itself (v.g. 'man') with the same universal considered in relation to its parts (v.g. 'Peter', 'James', 'John' etc); wherefore this minor is a convertible proposition (cf. n.230,C).

a2b. Thus:

a2bl. this induction which ASCENDS from PARTS TO TOOLE:

\* Copper  
and iron  
and gold ————— is a conductor of electricity  
and silver  
and zinc

But the universal which  
relatively to 'conductor  
of electricity\*' has  
its subjective parts:

"copper  
and iron  
and gold  
and silver  
and zinc

is metal.

ASCENDING  
INDUCTION.

Therefore metal is a conductor of electricity\*

a2b2. is thus reversed so as to DESCEND from WHOLE TO PART:

'Metal is a conductor of electricity

But copper  
and iron  
and gold are subjective parts of the universal: metal.  
and silver  
and zinc

DESCENDING  
INDUCTION.

Therefore iron (or copper etc) is a conductor of electricity\*

b. This descending induction is not to be confused with a  
syllogism:

b1. such as this syllogism:

'Every metal is a conductor of electricity.

But iron is a metal.

Therefore iron is a conductor of electricity\*.

b2. For:

b2a. Here, (in the syllogism) 'metal\*' is a middle term which  
identifies the other terms ('iron\*' and 'conductor of electricity\*') with each  
other.

b2b. But in the (descending) induction 'metal\*' is a superior  
universal dividing itself into its subjective parts.

c. From what has been said it is evident;

cl. That a singular conclusion (v.g. 'Peter is mortal' ) may  
be inferred either syllogistically or inductively by descending induction:

cla. By syllogistically indeed:

cla1. thus:

\* Man is mortal.

But Peter is a man.

Therefore Peter is mortal\*.

cla2. Here:

cla2a. The inference or illation is based upon the connexion of  
three concepts ('mortal', 'Peter', 'man');

cla2b. and the conclusion is drawn;

cla2b1. not because 'Peter' is a subjective part of 'man\*', (cf.  
n. 272,B).

cla2b2. but because 'Peter\*' and 'mortal\*' are identified by means  
of 'man\*.

clb. But also inductively by inductive descent:

clb1. thus;

\* Man is mortal.

But to say man is to say Peter and James and John etc.

Therefore Peter is mortal'.

clb2. Here:

clb2a. The inference or illation is based upon the identity of the universal whole 'man' with this same whole as it IS IN its subjective parts ('Peter', 'James', 'John' etc);

clb2b. and the conclusion is drawn because 'Peter' is a subjective part of 'man'.

c2. And that a universal conclusion (v.g. 'Iron conducts electricity') may be inferred either syllogistically or inductively by ascending induction or inductively by a descending induction:

c2a. Syllogistically indeed thus:

Every metal conducts electricity.  
But iron is a metal.  
Therefore iron conducts electricity'.

c2b. But inductively by inductive descent, thus:

'Metal conducts electricity.  
But to say metal is to say copper and iron and silver and gold etc.  
Therefore iron conducts electricity'.

c2c. But also inductively by inductive ascent, thus:

'This piece of iron, and this one, and this one, etc, conducts electricity.  
But the universal which is in this piece and this piece and this piece  
etc, is iron.  
Therefore iron conducts electricity'.

306. SCHEMATIC RECAPITULATION: The difference between the syllogism and induction may be therefore thus schematically illustrated as by Maritain (Introduction to Logic, p. 263):

INDUCTION	SYLLOGISM
a1	
a2	
a3 is B.	C is B.
a4	
a5	
But the universal which relatively to B has as its subjective parts a1, a2, a3, a4, a5	But A is C.
Therefore A is B.	Therefore A is B.

307. IRREDUCIBILITY OF INDUCTION TO THE SYLLOGISM; From what has been said, it is evident:

- A. That those modern writers ERR who:
- a. along with Lachelier (Eltude sur le Syllogisme, pp. 37-38), reduce induction to a syllogism of the third figure;
  - b. or with Wolf reduce it to an enthymeme (cf. n. 294, C) whose major: 'that which is attributable to all the individuals is attributable to the universal which contains them', would be thought, but left unexpressed.
- B. But neither of these assertions can be admitted:
- a. For in either case, no induction would be legitimate unless it were complete: for an incomplete induction could not be reduced to a legitimate syllogism or enthymeme, since the syllogism or enthymeme would have S more universal in the conclusion than in the premisses.
  - b. The syllogism or the enthymeme would be illegitimate whenever the enumeration of parts is incomplete; for otherwise S would be taken more universally in the conclusion than in the premisses.

C. Accordingly, if induction were a kind of syllogism:  
 a. then (except in those cases where the enumeration of parts is complete), it would be only an invalid reasoning and illegitimate;  
 b. wherefore it would rightly be excluded from logic - as some recent logicians - nominalists - have excluded it.

D. The FOUNDATION of this error of these modern writers is their NOMINALISM, according to which there is no universal, but only a collection of individuals. And therefore:

a. just as according to the same writers, and for the same reason, every legitimate syllogism is a hypothetical syllogism (cf. n.291, F),  
 b. so induction is reduced to a hypothetico-deductive reasoning. (Cf. Lalande: Les theories de l'induction et l'experimentation, p.234).

E. Therefore it is a fundamental error - of which many modern writers are guilty - to explain induction from the point of view of a collective whole or of a simple collection; that is, to regard induction as consisting in a process of passing a predicate verified of some members of a certain collection either to an entire collection of individuals taken as a collection, or to all the individuals of a collection taken as individuals.

a. For in the former case, induction would be an illegitimate process such as this:

'Player a  
 player b has an immortal soul.  
 player c  
 player d

But player a  
 player b are the tennis team.  
 player c  
 player '3'

Therefore the tennis team has an immortal soul'.

b. In the latter case, induction would be sterile, not yielding a new truth, but merely tautological, and would not express a genuine reasoning, but would merely collect many singular truths distinctly expressed into one collection, and at most would serve as a mere sensible representation (as might be effected by a diagram or by co\nting on one's fingers):

bl. Such would be this example-

---I

'Peter  
 John  
 James the Major  
 James the Minor  
 Andrew  
 Philip  
 Thomas was in the supper-room  
 Bartholomew  
 Matthew  
 Simon  
 Judas  
 Matthias

But Peter  
 John  
 James the Major  
 James the Minor  
 Andrew  
 Philip  
 Thomas are the apostles.  
 Bartholomew  
 Matthew  
 Simon  
 Judas  
 Matthias

Therefore ALL the apostles were in the supper-room'.

b2. Here:

1)2a. There is :

b2a1. NO ASCENT to a universal,

b2a2. but only a passage from many singular truths distinctly expressed in the 'major' to the SAME SINGULAR TRUTHS collectively expressed in the 'conclusion'.

b2b. Yet:

b2b1. this is what many modern writers understand by 'formal induction',

b2b2. and they think that this is the only kind of induction known to the ancients, - although the ancients never thought it worthy of consideration in their treatment of induction.

Ci But in reality:

c1. Induction consists in attributing to an intelligible UNIVERSAL a predicate verified of some of the individuals or of some of the subjective parts in which this universal is realized (n.305, A.b);

c2. Which operation is legitimate when the enumeration of the individuals or subjective parts is sufficient.

c3. Wherefore:

c3a. In its correct formulation:

c3a1. ascending induction has its conclusion formulated thus: 'EVERY (metal) IS' (or simply 'METAL IS') ; but not thus: 'ALL. \_\_\_\_\_ ARE',

c3a2. and descending induction has its major formulated thus: 'EVERY (metal) IS' (or simply 'METAL IS') ; but not thus: 'ALL. \_\_\_\_\_

c3b. For it is essential to induction that it transfer a predicate:

c3b1. not from 'some' to 'ALL'.

c3b2. but from 'some' to 'EVERY'.

308. SUPREME PRINCIPLE OF INDUCTION: It is evident from this, that the nature of induction is diverse from the nature of the syllogism, as explained, that the supreme principle of induction is other than the supreme principle of the syllogism.

A. And indeed the SUPREME PRINCIPLE of induction is: WHAT IS TRUE OF MANY SUFFICIENTLY ENUMERATED PARTS OF A DETERMINATE UNIVERSAL SUBJECT IS TRUE OF THIS UNIVERSAL SUBJECT.

a. This principle, like the supreme principle of the syllogism, is self-evident.

b. NOTE therefore that induction legitimately concludes ONLY WHEN the enumeration of parts is SUFFICIENT..

b1. But the enumeration of parts is SUFFICIENT when we have reviewed a sufficient number to know (with certitude or at least probably):

b1a. that they are, in relation to this predicate (v.g. 'conductor of electricity'), really the parts of this universal (v.g. 'metal'), and not of another more restricted universal (v.g. 'metal thus and thus physically or chemically conditioned')

b1b. or, in other words, that the universal which represents them in relation to this predicate is really the universal ('metal') which we are considering.

b2. But if a French boy argued:

b2a. thus:

'Pierre	
Louis	
Jacques	speaks French
Francoise	
Bernadette!	
	PARTS INSUFFICIENTLY ENUMERATED, in relation to the universal 'man'.

But the universal which relatively to the predicate 'speaking French' has as its subjective parts;

Pierre	
Louis	
Jacques	is man....
Francoise	
Bernadette	
	TOO BROAD A UNIVERSAL in relation to the predicate 'speaking French'.

Therefore (every) man speaks French'	CONCLUSION ILLEGITIMATELY DRAW.
--------------------------------------	------------------------------------

§§. an illegitimate  
 d2d1. a runnSt\* rjiW4iwW««ixi Vi pal'ts, such as to ino1^<>iw -\*lg^[ i-j am'  
 'G-ustav\* (vis. individuals not educated in French), would ahw th^jioi  
 every man speaks French.

b2b2. and the universal which really represents those parts is a  
 universal less broad than 'm; n\*, nar ely a tjduc.'.ted in French'.

B. Accordingly:

a. ?hen the enumeration of parts is sufficient, the mind G^, and  
 indeed, MST, conclude from the parts to the whole (i.e. to the universal).

b. But:

b1. since very frequently the enumeration of parts is sufficient to  
 know only probably that these parts are really, in relation to this predicate  
 (v.g. 'conductor of electricity') the parts of this universal (v.g. 'metal'),  
 and not of some more restricted universal (v.g. 'metal thus and thus conditioned  
 physioaily or chemically conditioned'),

b2. therefore induction very frequently yields only a probable conclusion.

## ARTICLE TffO.

### DIVISION OP INDUCTION.

309. DIVISION INTO COMPLETE AND INCOVLEPLETE INDUCTION: Induction is divided:

A. into:

a. COIOplete induction, wherein all the subjective parts of the whole are  
 enumerated;

b. and INCOMPIETE induction. wherein not all the subjective parts of the  
 whole are enurerated.

B. But this division is to be rightly \anderstood.

310. COMPLETE INDUCTION: Not the same is meant by the name 'complete  
 induction' by the SCHOLASTICS and by MODERN logicians.

A. By the SCHOLASTICS the name 'complete induction' is given, not only  
 to induction wherein all the parts are formally enumerated, but also to  
 induction wherein all the parts are only VIRTUALLY ENUI/ERATED; or, in other  
 words, not only to induction which is fomially complete, but also to induction  
 which is only virtually complete.

a. Of these two:

a1. Induction formally complete corresponds to that vftiich MODEEET writers  
 call complete induction; ~

a2. Induction virtually complete corresponds to that which MODEEEIN writers  
 call incomplete induction wherein nevertheless the parts are sufficiently  
 enumerated to permit a legitimate conclusion.

b. But, because, they are ignorant of this distinction (between  
 enumeration formally complete and enumeration virtually complete),

b1. many MCDERN writers mistakenly think that SCIENTIFIC (i.e.  
 incomplete yet~ sufficient) induction:

b1a. was discovered by FRANCIS BACON (1561-1628).

b1b. and was unknowm to ARISTOTLE and the SCHOLASTICS.

b2. For which reason they call:

b2a. complete induction (i.e. induction formally complete) by the name  
 of ARISTOTELIAN iraJuction,

b2b. and incomplete induction (i.e. induction virtually complete, or  
 incomplete yet sufficient, or scientific) by the name of BACONIAN induction.

c. But the truth is:

c1. that ARISTOTLE deals with induction:

cla. In the 'Analytica Priora' (1, 2, c.23):



- clal. where the illustration which he uses shows that he has in mind an incomplete yet sufficient induction;
- cla2. and where the sentence: "We must apprehend C" (the mean of induction) "as made up of all the particulars, for induction proceeds through an enumeration of cases" (Analyt. Priora, hS h, 27) signifies that the enumeration can be taken as if it were complete, that is, it is virtually complete.
- clb. In the 'Topica' (I, 12) where also Aristotle clearly has in mind incomplete induction.
- clc. In the 'Analytica Posteriora' (I, c.18).  
ST ALBERT THE GREAT deals with induction:
  - c2a. in his commentary 'in Analytica Posteriora' (I, II, tract.VII, c.4)|
  - c2b. and in his commentary (in Topica' (I, II, tract. III, c.4).
  - c5. ST THOMAS deals with induction in his commentary 'in Analytica Posteriora' (II. lect. 4).
  - c4. JOHN OP ST THOMAS deals with induction in his 'Cursus Philosophicus' (I, p.16; pp.60ss; p.98ss; ed.Resier).

- d. Yet it is to be admitted that this distinction has no place in a nominalistic theory of induction:
  - d1. For there cannot be an enumeration VIRTUALLY complete, save where the UNIVERSAL is found.
  - d2. But in a collection of individuals, only an enumeration formally complete can be truly called complete.

B. Therefore, by reason of their NOMINALISM, these MODERN writers, recognize as complete induction none other save that which is formally complete.

311. INCOMPLETE INDUCTION: This name 'incomplete induction':

- A. As understood by these MODERN authors, includes that induction which the ancients called virtually complete.
- B. But as understood by the ANCIENTS. is restricted to an induction:
  - a. with an insufficient enumeration of parts, (i.e. not even virtually complete),
  - b. and therefore illegitimate.

312. SCHEMATIC CONTRAST: The contrast between the terminology of the ancients and scholastics on the one hand and that of modern authors on the other hand, is thus exhibited schematically

	formally	COMPLETE induction.
	COMPLETE	
	virtually	sufficiently
Induction is divided by the ancients and scholastics into induction which is	(Scientific induction)	(Scientific induction).
	to which correspond in the language of the moderns	INCOMPLETE induction, in which the parts are enumerated
	INCOMPLETE or in which the parts are INSUFFICIENT-ly enumerated....	insufficiently.

## AHPIGLE THREE.

## IMPERFECT INDUCTION.

313. REASONING BY RESEMBLANCE OR BY ANALOGY: Whereas in every perfect induction, the mind rises from an enumeration of singulars or particulars to a UNIVERSAL conclusion (n.305).

A. In imperfect induction on the contrary, the mind passes from one or several singular facts (or from a particular enunciation) to another SINGULAR or PARTICULAR enunciation it infers in virtue of a resemblance. (Of. Analyt. Post. I, c.1, 71 a. 10; Comment. S.Thomae, lect.1, l.n.12).

a. Let us take these examples:

al. 'Paul was cured of his headaches by this medicine.  
Therefore John will be cured of his headaches by this same medicine\*.

a2. 'Abscesses in human being are healed by penicillin.  
Therefore mastitis in cows will be healed by penicillin'.

b. This reasoning is not an irreducible species of reasoning, but rather is reduced to induction as the imperfect to the perfect.

b1. And indeed:

b1a. Though this reasoning by resemblance may be resolved into a complex reasoning\* to wit, into induction (by insufficient enumeration) and a syllogism, thus:

\* James was cured of his rheumatism by this treatment.

INDUCTION

Therefore everyone suffering from rheumatism  
will be cured by this treatment.

But Henry is suffering from rheumatism.

SYLLOGISM .

Therefore Henry will be cured by this treatment'.

b1b. Nevertheless, the mind concludes from the singular (or particular) to the singular (or particular), not by means of a universal law, but by means of the resemblance between the two cases:

b1b1. Thus:

'James was cured of his rheumatism by this treatment.  
But Henry's case resembles James' case.  
Therefore Henry will be cured of his rheumatism by this treatment'.

t

b1b2. Here the mind passes only from singular to singular, not to the universal whereof the subject of the major is a subjective part:

b1b2a. the reason being that in the minor the mind does not ascend to that universal, but only to something less proper and most congruous as a reason of argument, to wit, to a resemblance - which indeed is a universal whereof the two cases are subjective parts (for each 'resembles'), "without knowing whether the two subjects (James and Henry) are, in regard to the predicate ('cured by this treatment\*') contained under a same universal REASON.

b2. Therefore:

b2a. Reasoning by resemblance is not an example of what John Stuart Mill and other Nominalists call "an inference from the particular to the particular", as if no universal played any part.

b2b. For there is NO INFERENCE FROM THE PARTICULAR TO THE PARTICULAR without the mediation of a universal, but only association, and indeed;

b2b1. in the sensible order association of IMAGES.

b2b2. and in the intelligible order association of CONCEPTS or IDEAS.

b2c. But rather, in reasoning by resemblance inference is made in virtue of a universal, to wit, 'resemblance\*.

B. This kind of reasoning:

a. Yields only a probable conclusion, for the reason given above (A, blb2a).

b. Yet:

bl. it plays an immense role in discovery or invention.

b2. nevertheless in order that certainty be had in scientific judgment recourse must be had to a perfect kind of reasoning (to wit, either to the syllogism or to induction with sufficient enumeration).

#### 314. DISTINCTION BETWEEN REASONING BY ANALOGY AND ANALOGICAL KNOWLEDGE:

It is OF THE HIGHEST IMPORTANCE to avoid confusing 'reasoning by analogy\* (i.e. reasoning by resemblance), with which we are here concerned, with analogical knowledge.

A. In reasoning by analogy, the analogy, which designates a more or less accidental resemblance, has reference to a manner of establishing a conclusion, that is, to a PROBABLE INFERENCE OR ILLATION of which it is the foundation.

B. But in analogical knowledge:

a. the analogy has reference to a CONCEPT and to the thing which the concept represents;

b. and it is, at least in analogy of proper proportionality (cf. n.153), an intrinsic property of the concept;

c. Therefore, if one analogate is immediately known by us, then the knowledge which we can have of the other analogate, which is only analogically known:

c1. though imperfect,

c2. yet remains CERTAIN.

#### 315. EXAMPLE AND COMPARISON: An example or comparison:

A. Is scarcely even a most imperfect reasoning by resemblance.

B. And its purpose is to illustrate and make more sensibly manifest some proposition, - not to infer it.

C. And the truth of the proposition is utterly independent of the examples or comparisons employed to illustrate it.

D. And the goodness of an example is derived:

a. not from its truth in itself,

b. but from its aptitude to manifest or render more clear the proposition which it is used to illustrate.

#### SCHEMATIC SUMMARY.

#### 316. SCHEMATIC SYNOPSIS: The contents of the fore-going section on induction may be thus synoptically presented:-

			to a syllogism of the third figure; as say Lachelier and QoTjlot.
		It is not reduced	to an enthymeme; as says Wolf.
	Its nature		There is no middle term.
		But it differs ESSENTIALLY from the syllogism:	
	PROPERLY SO-GAT.T.Kn		It passes from subjective parts to the universal.
On induction	Its division	Complete (formally).  Incomplete -  Analogy (by resemblance).	sufficient (virtually complete).  insufficient.
	IMPROPERLY SO-CALLED		
		Example.	

SECTION POUR.

SOPHISTIC PROOF.

317. ORDER OP PROCEDURE: Since here we begin MATERIAL LOGIC (n.252), this section;
- A. Will deal:

a. First, with pre-ambles to material logic.

b. Secondly, with sophistic proof.

B. Hence the following order:-

Pre-airibles to material, logic

Chapter twenty-seven.

Section four

Sojdiistic proof

Chapter twenty-eight.

CHAPTER TWENTY-SETEK.

FEE-AMBLES TO MATERIAL LOGIC.

318. CONNEXION WITH THE PORE-GOING: In sections II-III we have dealt with reasoning as it is ITJATION; which is the consideration of the form only of reasoning.
- A. But now we must treat of reasoning as it is PROOF: ydiich consideration is MATERIAL LOGIC, and regards:
- a. not only the FORM.  
Lut also the MATTER of the reasoning.
  - B. But reasoning, as it is proof or argument, is ordered towards TRUTH.  
i.e. towards adequation or conformity of intellect with thing.
  - C. Cut relatively to truth, the human intellect has itself in diverse ways;
    - a. For:
      - a1. Either it NEITHER possesses NOR SEEKS the truth: and then its state is nescience or IGNORANCE.
      - a2. Or it does NOT possess the truth, and ABSTAINS from having the truth: and then its state is DOUBT.
      - a3. Or it does NOT possess the truth, and yet INCLINES towards it: and then its state is SUSPICION.
      - a4. Or it does NOT possess the truth, though it SAYS THAT IT HAS it; and then its state is ERROR.
      - a5. Or it POSSESSES the truth, yet imperfectly only: and then its state is OPINION.
      - a6. Or it POSSESSES the truth, and indeed perfectly; and then its state is CERTITUDE.
    - b. Which may be thus shown schematically :-

and does NOT seek it	IGNORANCE.
it DOES NOT POSSESS the truth	and WITHHOLDS ITSELF from it - DOUBT.
and yet INCLINES towards it	- SUSPICION.
and yet SAYS THAT IT HAS it	- ERROR.
[yet imperfectly only.....	OPINION.
or POSSESSES the truth	
-	and indeed perfectly. CERTITUDE.
- Relatively to a, tiAth the human intellect has itself in diverse ways, according as
- D. But reasoning, as it is proof;
- a. has no place:
    - a1. in those states in which there is NO ADHESION of the mind, to wit:
      - ala. in nescience or ignorance.
      - alb. in doubt.
      - ale. in suspicion.
    - a2. in those things also to i^ich the mind adheres WITHOUT PROOF.
  - b. For reasoning, as it is proof, has place only where there is ADHESION of the mind THROUGH PROOF.

319. THREEFOLD GENUS OF REASONING AS IT IS PROOF: Therefore reasoning, as it is proof, is reduced to three genera; to wit:

- A. So<sup>ph</sup>istic proof; which is dealt with in the present section.
- B. Probable proof, which will be dealt with in the next section.
- C. Certain or scientific proof, or demonstration. which will be dealt with in the remaining sections.

CHAPTER TWENTY-EIGHT.

SOPHISTIC PROOF.

320. ORDER OF PROCEDURE: This, chapter;
- A. Will consider:
    - First, sophistic proof in general.
    - b. Secondly. sophisms or fallacies in special: and indeed:
      - b1. in the first place, will be treated sophisms arising from vocables;
      - b2. in the second place, will be treated sophisms arising from things signified.
    - c. Thirdly, the teaching of modern writers regarding sophisms.
  - B. Hence the following order:-

Sophistic proof in general	Article one.
On sophistic Sophisms in special proof;	in <b>diction.</b> Article two.
	outside diction Article three.
Teaching of moderns regarding sophisms.	Article four.

ARTICLE ONE.

SOPHISTIC PROOF IN GENERAL.

321. DISTINCTION OF SOPHISTIC PROOF FROM PARALOGISM: From sophistic proof:
- A. Must be distinguished PARALOGISM. which is a syllogism consisting of true premisses, but offending in form.
  - B. In which case:
    - a. there is no consequence,
    - b. and therefore no proof.
  - C. As an example of a paralogism:
    - a. Let us take this:
      - 'Some animals are mammals.
      - But every cow is an animal.
      - Therefore every cow is a mammal\*.

b. In which:

b1. each proposition is true,

b2. but there is no consequence, because M is not once universal,

322, DISTINCTION OF SOPHISM FROM SIMPLY ERRONEOUS PROOF;  
Likewise sophistic proof;

A. Must be distinguished from a simply ERRONEOUS proof, which is;

a. a good argumentation,

b. consisting of premisses evidently false.

B. As an example of a simply ERRONEOUS proof:

a. Let us take this;

'Every animal is a man.

But every plant is an animal.

Therefore every plant is a man<sup>T</sup>.

b. In which;

b1, there is no defect in form,

b2. but each of the propositions is evidently false.

323, NOTION OF SOPHISM; A sophism, though in it there is good consequence, nevertheless PROCEEDS FROM FALSE PREMISES WHICH SEEM TO BE TRUE.

324, TWO GENERA OF SOPHISMS; Sophisms or fallacies may arise:

A. FROM THE LANGUAGE (VOCABLES) namely, when from unity of vocable is false inferred unity of thing: these are called FALLACIES IN DICTION.

B. FROM THE THINGS SIGNIFIED, namely, when some things IN SOME WAY agreeing or differing are taken as if they were SIMPLY the same or diverse: these are called FALLACIES OUTSIDE DICTION.

## ARTICLE TWO.

### SOPHISMS OF FALLACIES IN DICTION.

325, **SOME** EXAMPLES: Let us take these examples;

A. 'Every spirit is an immaterial substance.

But whisky is a spirit.

Therefore whisky is an immaterial substance.'

B. "'The duke yet lives that Henry shall depose" . (Shakespeare Henry V).

But Henry is king of England.

Therefore a king of England shall depose a duke who still lives'.

C. 'He who cannot be standing upright, has not the power to stand upright.

But one who is lying down cannot be standing upright.

Therefore one who is lying down has not the power to stand upright'.

B. 'A senator who, bidden to apologise for having called another senator a contemptible liar says; "I called him a contemptible liar; it is true; I am sorry for it," ~ makes a good apology.

But senator X said this, when bidden to apologise for having called senator Y a contemptible liar.

Therefore senator X made a good apology.

a!'.--John ate the meat Judith bou^\_.  
But the meat •which Judlfch bought was raw  
Therefore ttohn ate raw meat\*.

b. ¥hat Kapoleon was. Nelson was not^  
But Napoleon was a man.  
Therefore Nelson was not a man\*.

326. DIVERSE SOFIISMS: In all the above examples there »e which  
accord in this, that they all ISSUE FROM THE LANOJAGB, though ^  
diverse ways;

- A. In the first example (n.325, A):  
a. the ^nphi^Arisea PROM THE TA^TTiS Qg THE SAME TEta? (spirit)  
nTVBBSS SIGNIFIOATTON.  
b. This fallacy is called EQUIyPOATION.  
c. Whereof another example;  
cl. is this:

‘All who die without baptism perish eternally. ^  
Bui alXTCTsTMohammedans and heathens die without baptism. ^  
Therefore all JewSs Mohaimnedans and heathens perlah ctearn^jj •

is trae only if 'baptlro\* 1. token  
i>t only baptism of water, but also baptism of chatty and  
c2b. but the minor is true only if ^baptism is taken narrowly to  
Include only Baptism of water#

- B. In the second example (n.325, B):  
a. the sophism arises mm AMBIGUJ^, not f a tern, ^t 0? A  
- phrase or clause of proposition (cf. nel6l)i - for the Claus  
•that Henry shall depose' may be taken to signify:  
al. this:" \*whom Henry shall depose\*,  
a2. or this: 'who shall depose He^y\*.  
b. This fallacy is called .  
c. Whereof further examples:  
cl. is this:

'Those horses are the bishop's.  
But the bishops are priests.  
Therefore those horses are priests\*.

c2. and this:

'Ore who adds oil to a flame, must have oil.  
But or.o who answers an angry man adds oil to the  
The.reF«X?e one who answers an angry man must have oil .

0. In the thj.rd example (n.325, O) ;  
a. the fallacy:  
al. arises from this: »  
ala. that in the major 'he who cannot be standing upri^t means  
•when he is not lying down\*j  
alb. but the minor is true only \*wl^n he is lying . ^ ^ \*  
a2. But aince'~^3tanding upright' and 'be lying down' are opposite,

.S.. the fajer Is true TW A PIYgaP 3BI88 (t.e. gi^  
Mparation from prostration): for ho ii\*o cannot be staging upright Jtoa  
he is not lying down, has not the power to stand upri^t; ^ ^  
-A2b. bL thSISiof is true IN A 00MP08ITE smm (i.e. given  
or conjunction with prostration), for one who is lying down oannot be standing

tho CP ooigosmca« gW)

- o. Other examples of this fallacy:  
ol. is this:



«One who cannot be virtuous is not responsible for  
But one is frequently naughty  
Therefore one <sup>^</sup>O is frequently gravely sinning x's not <sup>^</sup>j<sup>^</sup> -!onsibl<sup>^</sup>  
for his evil acts\*.

o2. and this:

'Two and three are less than four?  
But two and three are five.  
Therefore five is less than four\*.

D. In the fourth example (n.325, D):  
a. the sophism arises FROM A VARIATION OF ACCENT (OR YOC<sup>^</sup>  
IN THE SATIRE VDGABLES; for that utterance of the senator has this

fauci Si<sup>^</sup>e:

ali In the former the resemblance comes from this, that the SENSE JUNCTION  
(raw meat\*) signifies DIVERSE PKEDIGALCENTS; hAnirKt  
<sup>^</sup> Z<sup>^</sup>T<sup>^</sup>Li in the major is considered its quality raw;.  
alb. whereas in the minor is considered its quality raw;.  
a2. In the latter the fallacy arises from t<sup>^</sup>s:  
a2a. that in the major 'Napoleon was\* signifies INDIVIDUALITY,  
a2b. whereas in the minor it signifies N<sup>^</sup>Tiffi<sup>^</sup>  
b. This fallacy is called FALLACY OF FIGURE OF DICTIOIL

article three.

SOPWTCMR OR fallacies outside diction,.

327. SOME EXAMPLES; Let us take these examples:

- A#  
a\*. 'What is behind the wall is not known to you,  
what is behind the wall is your motor-car.  
Therefore your motor-car is not known to you.
- b. 'Man is risible.  
But risible is a property.  
Therefore man is a property'.
- B. 'It is lawful to the sick to eat meat on Eri<sup>^</sup><sup>^</sup>\*  
Therefore it is lawful to eat meat on i<sup>^</sup>jjay
- C. 'Napoleon died at St Helena and did not die in Paris.  
Therefore Napoleon died and did not die .
- D. 'He who was begotten by Aristotle was the  
Bliर्मto was begotten by AristST because he had Aristotle as his  
father.  
Therefore Plato was the son of Aristotle .
- E.  
a. 'If Peter is running, he is moved  
But Peter is moved.  
Therefore Peter is running'.
- b. 'If Peter is running he is moved.  
But Peter is not running.  
Therefore Peter is not moved\*.

- P.  
a! 'The Roman Empire fell after the rise of Ohristia<sup>^</sup>.<sup>^</sup>. <sup>^</sup>  
>rhP>Ttffn-re the rise of Ctoistianity was the cause of the tail  
of the Roman Empire\*.
- b. 'That #iich excites hatreds is evil,.  
But the irractice of virtue sometimes excites hatreds.  
Therefore the practice of virtue sometimes is evil '
- c. 'To die and to live are contraries.  
But to die is to be corrupted.  
Therefore to live is to be generated\*.
- G. 'Have you ceased beating your wife?  
No? Therefore you are still beating her.  
Yes? Therefore you did boat her.\*

328. DIVIRSE SOPHISMS: The preceaing are examples of sophisms OUTSIDE  
DICTION.

A. In the first (n.327, A.a) and .iS<sup>^</sup>Si-(n\*327,A<sup>^</sup>) examples the  
fallacies issue-f<sup>^^</sup> this, that THOSE THINGS  
AN ACCIDENT ARE INFERRED TO BEFIT (or not befit) ECS SUPJECT,

a. In the former example (n.327, A.a) is predicated of j[o\£- "  
^t befits 'what is behind the wall' (corporal accidents;.

b. In the latter example (n.<sup>^</sup>7, A.b) of 'm<sup>^</sup>' (subject having  
risibiliov) is predicated vAiat befits 'jOjaifelS.\* \ property

c. This fallacy is called FALLACY OF ACCIDENP.

Further examples of this fallacy:

d1.~is this celebrated one:

'You do not know what I am going to ask you.  
But vwhat I am going to ask you is your nmiie.  
Therefore you do not knwv vo\3r name.

d2. And this:

'Mental activities are not had without cerebral processes.  
Therefore mental activities are cerebral process<sup>^</sup> .

d3. And this:

'The concept is not had without the sensible image.  
Therefore the concept is the sensible image\*.

B. In the third example (n.327, B) ;

a. The fallacy arises from this, that Xx I-j  
CERTAIN PREDICATE BEFITS SO?.[S SUBJECT IN A ^ALIFIEB\_Sg{ ^ (secundum  
TT 7,73?ri'3"THAT SUBJECT SIMPLY, or in other words, it consists m  
1. toe simply shaking with what is true under qualafication

"" aSef;r-e this fallacy is called wnnit -SECmiPaM QUID' TO  
SBIPLY.

c. Further examples of this fallacy:  
cl. is this:

'The good save their souls.  
But Milton was good (a good poetl.  
Therefore Milton saved his soul\*.

c2. 'Ecclesiastical authorities put restraint upon a scientist.  
Therefore ecclesiastical authorities are hostile to scientists .

C. In the fourth example (n.327, C) the fallacy arises FROM FCiRGCTFDU<sup>^</sup>

—'^oTSItLScSof^S^br^<sup>^^^</sup> USE SAME,  
and IN THE SAME WAY, and WITH RESPECT TO THE SAME, and AT THE SAME,IBg>  
IN THE SAME PLACE.

•b. The example given offends from this, that the contradiction alleged does not concern the same place.

c. This sophism:

c1. is called **IGNORING THE ISSUE** ('**ignoratio elencM** - ignorance of contradiction or of refutation);  
 c2. and is contraiitted whenever scxaeone argues **BESIDE** <sup>-nA-nMni tqcstr\*</sup> **PO^ jg ISgJE>** as when someone 'mistakes the question\* or proves 'an irrelevant conclM^ ^ or 'evades the issue': for then he deems himself to contradict, or profess s to contradict, a difficulty which he in no way contradicts. ^

c3. This fallacy receives special names according as it is daversei practised. It 'APPEAL TO THE MOB' (argumentum ad populum) when it consists in an appeal to the prejudices and passions of someone strives to prove that communism is desirable by depicting yivid^ ^d harrowingly the sufferings of the poor and the rapacity and injustice of the z\*d.ch

\*o3b. It is called 'APPEAL TO MIGHT' (argumentum ad baculum) when it is an endeavour to prove that some doctrine is false from prophecies an ea s of evil to those who hold it; thus:

'If you say that this war is unjust, you will have the whole country up in arms against you.  
 Therefore this war is not unjust'.

c3c. It is called 'APPEAL TO SHAME\* (argumentum ad verecundj.am) when it consists in trying to prove some doctrine from this, that to deny^ a doctrine would involve the shame of being in opposition to men of eminence or authorityj as ^ien someone argues thus:

'All the eminent biologists of the world hold the. doctij.ne\_of transform!sm.  
 Therefore the doctrine of transfomism ia..tgye- •

c3d. It is called 'APPEAL TO Pm\* (argumentum ad misericordiam) when it consists in playing upon the 'heart-strings' of the listeners, as w an advocate appeals to the pain that a conviction would cause in tne,parents and relatives of the accused.

c3e. It is called an 'APPEAL TO IGNORANCE' (argumentum ad ignor^tigmj when it relies upon the ignorance of the hearers. ^, 4.4

c3f. It is called an 'APPEAL TO THE INDIVIDUAL\* (argumentum ad homn|m; when it shows from the adversaries' previous deeds or utterances .hat he is not an apt proponent of a certain doctrine. r.,aTr,^

D. In the fifth example (n.327, D):

a. there is had a **BEGGING OF THE QUESTION** (petitio principii):

a1. which is the **ASSUMPTION CF WHAT IS TO BE PROVED A5 A PRINCIPIg OF THE PROOF;**

a2. -v^ich is called 'petitio principii' (borrowing of a principle; because the principle of thft proof is boirrowed from the conclusion. ^

b. Aristotle dr'.itinguishes five ways in inhioh this fallacy may be committed, to wit:

b1. By assuming as a principle of proof the very proposition which is to be proved, - which is usually done under cover of synonyms, thus

<sup>^</sup>An upper chamber is an anachronisms\_  
 Therefore the House of Lords is out of date\* #

b2. By assuming, for the proof of a particular conclusion, a principle which itself cannot be known save through a knowledge of that .z^;ticul^; thus

'All the inhabitants of town X perished in the tidal w\_ ^§,»  
 But James was an inhabitant of town X.  
 Therefore James perished in the tidal way^', (Of. n.272, B.dlal)

b3. By assuming, for the proof of a universal conclusion, a particular proposition which itself cannot be known save through ft Qf.,t.b^»t universal: thus:

'All past men, and all present men, and all future men, are mortal'.  
 "therefore every man is mortal'.

b4. By assuming successively, part by part, the conclusion which is to be proved,\* thus;

'The art of medicine is a knowledge of what is healthy.  
 But the art of medicine is a knowledge of what is unhealthy  
 Therefore the art of medicine is a knowledge of what is healthy  
 and unhealthy\*.

b5. By assuming, without independent evidence, a proposition is the correlative of the conclusion to be proved thus;

'Aristo was the father of Plato.  
 Therefore Plato was the son of Aristo\*.

0. NOTE that;

c1. When the begging of the question is immediate or done by a single step of inference, it is called HYSTERON PROTERON (later-earlier). Such are all the examples given above.

c2. But when the begging of the question is mediate, i.e. when the conclusion is proved from the principle, and the principle from the conclusion, then it is called a YIDIQUS QIBCTJE or AROyiNG- IN A ——— ^  
 Thus Plato;

c2a. in his 'Phaedo' proves the immortality of the soul from its simplicity,

c2b. and in his 'Republic' proves the simplicity of the soul from its immortality.

E. In the sixth (n.327, E.a) and the seventh (n.527, E.b) examples;—

a. The fallacy arises from this, that IF IS THOUGHT THAT THE ANTECEDENT FLOWS FROM THE CONSEQUENT JUST AS THE CONSEQUENT FLOWS FROM THE CONSEQUENT THAT THE ANTECEDENT FLOWS FROM THE CONSEQUENT JUST AS THE NEGATION OF THE ANTECEDENT FLOWS FROM THE NEGATION OF THE CONSEQUENT.

b. This fallacy is called the FALLACY OF CONSEQUENT.

c. As a further example of this fallacy, take this;

'If sovietism is a good form of government, it will survive.

But it survives.

Therefore it is a good form of government'.

F. In the eighth (n.327, F.a); ninth (n.327, F.b) and tenth (n.327, F.c)

a. The fallacy arises FROM THE ASSUMPTION AS A CAUSE OF SOME CONCLUSION THAT WHICH IS NOT REALLY THE CAUSE OF IT.

b. This fallacy is called the FALLACY OF NON-CAUSE AS CAUSE, or of CAUSE

^ Which fallacy may be committed in diverse ways;

c1. By taking what merely precedes as a cause;

cla. in which case the fallacy is called the fallacy of 'AFTER THIS, THEREFORE BECAUSE OF THIS' (post hoc, ergo propter hoc);

clb. of which;

clb1. the eighth example given is an example;

clb2. and an example is had in the argument formerly used that since malarial fever is prevalent in swampy regions, it is caused by poisonous vapours arising from swamps.

c2. By taking a mere occasion as a cause, as in the ninth example given.

c3. By taking a premiss;

c3a. as the cause of a conclusion, when it is not really the cause of it, as in the tenth example given; for the major there is not the cause of the conclusion, since death and life are not contrarily, but privatively, opposite. (Cf. n.57, C.d).

c3b. erroneously as the cause of the falsity of a conclusion, when this falsity is caused by another premiss;

c5b1. as in this celebrated example;

\*If there were no/time, there would not Tjq nifoit;  
 But if there were not night, there would "be /ay.  
 But if there weye dav. there would be tlm^.) ^  
 Therefore, if there were no time, there wotald Be time .

o5b2. Where the falsity of the false and absurd conclusion is to be ascribed, not to the first proposition, but to the geppM.

t Sc ^T.1, 13 aim 10 A  
 QIISSTIOM WHICH CCWIfAINS aiiiVJilHAL IWCERROOATIOK3 BBQUIRINS SEVERAL AUswKhS.  
 ik nailed the FALLACY OF MAMY QUESTIONS,

ABTIC!LE POUR.

MODBRN TEACHING REGAltDINS SOBHISTRY,

329. OTHER DIVISIONS PROPOSED: Modem authors propose other divisions of sophisms, - and divisions indeed which do not lack legitimacy^ although they less profoundly exhaust the question, than does the division proposed by the ancients.

3307\*11®!® SOHIISMS AS ENUMERATED BY MQDEEJN WRITERS: These are the following:

A SOPHISM OP HYPOTHESIS,~.which is had when some gratuitous supposition or some **th rep^n^tg^**son is taken FROM ft, HIEOONqEIVEP PREJUDICE, as a foundation of reasoniiiig. Examples are these:

- a. \*Mat;t;er is eternal\*.
- h, \*ATl things are reduced to movement\*.
- c. \*Man took his origin from some ancestor vftiich he has in pQiiB^ with the ape\*.

B SOPHISM OP INDUCTION. wh,ich is had when a uQivgxdgal law is concluded

^

the sophis. of

- a1. from one a conclusion is drawn about all,
- a2. or something which avaiFLs only as regards certain parts is asserted about the whole.

b. Examples are:

b1. this:

\*Certain religious are not virtuous.  
 Therefore no religious are virtuous\*.

b2. and this:

Part of man (his body) perishes.  
 Therefore the whole of man perishes\*.

n. SOPHISM OP ANALOGY:

- a. which has affinity with that which has been named^^above U\*328, n;  
 "from what is said \*secundum quid\* to what is said simply\*";

B. and is a sophism whereby it is asserted that things having some resemblance and proportion apjree simply and in every respect.

D. PASSAGE mm GENUS TO GENUS, which is a sophism ^®reby^ffiCI^^ AND PAOrrof SOME ORDER ARE JSSOLtmY AND WITHOUT REASON fipDER QUITE DIVERSE. Examples are;

81\* «A miT»flnle does not occur through the forces of nature. ^  
 Therefore a miracle does not occur through supernatural power .

- b. »A law which avails in the mechanical order. avails also in the vital order\*.

351. OTHER SOPHISMS AS ENUMERATED BY MODERN WRITERS: To those chief sophisms others are to be added:

A. SOPHISM OF AUTHORITY, whereby some doctrine is confirmed by a fictitious authority, - fictitious at least in regard to the question under dispute, - as when the pronouncements of eminent physicists or biologists are alleged in regard to a philosophical question, as if they spoke with authority regarding it.

B. SOPHISM OF BRILLIANCE, whereby minds are deceived by the SUAVITY of speech or by BRIJ.T.TAWOR. RICHNESS AND ELOQUENCE OF EXPOSITION.

C. SOPHISM OF T.KARNING, whereby belief is more readily given to some man BECAUSE OF THE VASTNESS OF HIS LEARNING.

D. SOPHISM OF THE CATCH-WORD or CATCH-CRY or SLOGAN or SMART SAYING, whereby false doctrine is inserted into minds by means of an epigrammatic generalization, neatly and powerfully expressed, as in a 'smart saying'.

E. SOPHISM OF SUPPRESSION or of 'EX PARTE' STATEMENT, which is practised mainly about some question those things alone are said which favour one's own opinion, other things being omitted.

F. SOPHISM OF THE FALSE, which is practised, often through innuendo or insinuation or by taking advantage of association of images and of concepts, false conclusions are suggested.

G. SOPHISM OF DISTRACTION, which is had when true and false statements, certain and uncertain propositions, considerations various and unrelated are intermingled together in an entangled and tortuous speech or writing.

332. DIVISION PROPOSED BY MALEBRANCHE: Malebranche proposed a reduction of all sophisms:

- A. To five, to wit:
- a. ERRORS OF THE SENSES.
  - b. ERRORS OF IMAGINATION.
  - c. ERRORS OF UNDERSTANDING.
  - a. ERRORS OF INCLINATION, such as:
    - d1. anxiety,
    - d2. curiosity,
    - d3. greed for wealth,
    - d4. ambition for honour.
  - e. ERRORS OF THE PASSIONS.

B. But this is rather a division of the causes of fallacies than of fallacies themselves.

335. DIVISION PROPOSED BY THE LOGICIANS OF POST-ROYAL: These logicians:

- A. Distinguished:
- a. Sophisms arising from SUBJECTIVE CAUSES, which are twofold:
    - a1. sophisms of self-interest or of self-love.
    - a2. sophisms of passion.
  - b. And sophisms arising from the OBJECTS THEMSELVES.

B. But this division, like the preceding, divides the causes of sophisms rather than sophisms themselves.

SCHMATIC SUMMARY.

334. SYNOPTIC EEGAPITULATION: The csontents of the fore-going treatment of sophistry may be thus sunomarized schematically:-

## SECTION FIVE.

## PROBABLE PROOF.

## CHAPTER TWINTY-NINE.

## PROBABLE OR DIALECTIC PROOF.

355. ORDER OF PROCEDURE: This treatment of probable or dialectic proof:

A. Will deal:

a. First, with the nature of probable proof.

Secondly, with the two probable or dialectic syllogisms, to wit, the enthymeme and the episememe.

Thirdly, with the principles of the probable syllogism.

B. Hence the following order:-

Its nature.....Article one.

On probable

or dialectic Its twofold syllogism.....Article two.  
proof;

The principles of its syllogism.....Article three.

## ARTICLE ONE.

## NATURE OF PROBABLE PROOF.

336. NATURE OF OPINION: When the human mind begins to hold a truth, yet imperfectly, i.e. with fear of error, it is said to OPINE or to be of opinion.

A. For "OPINION signifies the ACT OF OUR INTELLECT WHICH IS BORNE TO ONE SIDE OF A CONTRADICTION. WITH FEAR OF THE OTHER." (I. q.79. a.9. ad 4).

B. But this notion of opinion is to be rightly understood

a. Opinion indeed:

a1. formally consists IN AN ASSENT of the intellect; because the intellect in opinion is "TOTALLY" (cf. Post. Anal. I, 1, n.6) borne to one side of a contradiction;

a2. and in this opinion differs from suspicion, in which:

a2a. the mind is inclined. WITHOUT ASSENT, to one side of a contradiction,

a2b. the other side of the contradiction NOT BEING TOTALLY relinquished.

b. But this assent which is had in opinion is given through a certain VOLUNTARY choice (II-II, q.1, a.4), which moves the intellect AS REGARDS SPECIFICATION. not as regards exercise only.

b1. In every adhesion of the intellect, the will moves the intellect to exercise, that is, that the intellect be applied to the object FOR THE PERFORMING OF THE EVIDENCE; but when this evidence is perceived, the intellect adheres WITHOUT ANOTHER INTERVENTION of the will.



Td2. But if evidence is lacking, then the will again intervenes to determine the ADHESION (i.e. to determine the intellect to adhere): this is an intervention as regards specification.

1)5. And indeed:

b3a. the will efficiently causes the choice of the side to be adhered to,

b3h. but together (in time) the object, apprehended by the intellect as worthy to be adhered to or approved (probable), SPECIFIES the very choice of the will:

b3c. and thus:

b3c1. the adhesion of the intellect in opinion is immediately specified by the choice of the will,

b3c2. which choice itself is specified by the object apprehended by the intellect.

b3d. And therefore in opinion, the choice:

b3d1. is immediately specified by the will,

b3d2. but is mediately specified by the object of the intellect, and depends upon this object.

b4. But on account of the defect of evidence and the intervention of the will, the adhesion of the intellect in opinion is free; (note that we say:

b4a. "free",

b4b. not "arbitrary" or "motiveless" or "capricious": for these are precluded by the dependence of the adhesion on the object.)

c. THEREFORE, in spite of what many authors, who forget this objective dependence, say, it is impossible:

c1. That the same intellect have together two opinions about the same;

c1a. for example: 'this war is unjust' and 'this war is just'.

c1b. and therefore:

c2. That the intellect have an opinion based on less probable motives, while more probable motives (for the opposite side of the contradiction) stand.

c2a. But note that we say "based on less probable MOTIVES". not "based on reasons objectively less".

c2b. For the object is here considered, not as specifying the intellect, but as specifying the WILL.

c2b1. But the will is specified by the object as this is presented to the will as good.

c2b2. But no object is presented to the will as good save through relation to the will, that is, according to the subjective dispositions of the will;

c2b3. and therefore the motives specifying the choice of the will retain a greater or less subjectivity, according as the will is less rightly or more rightly disposed.

d. But when it is said that in opinion there is fear of the other side of the contradiction, this does not signify: 'on account of the OPPOSITE REASONS existing', but rather: 'on account of the DEBILITY OF OBJECT of adhesion', which is CONTINGENT. (Cf. Post. Anal. I, 44, n.3ss).

d1. For, since in opinion, the FEAR of the other side is ACTUAL:

d1a. it must be produced by ACTUAL causes.

d1b. But the opposite reasons:

d1b1. since they are totally relinquished. - as they are, because the intellect is totally borne to the opposite side,

d1b2. remain only IN POTENCY, and THEREFORE CANNOT PRODUCE ACTUAL FEAR.

d2. But on the other hand, the CONTINGENCY of the inevident object, to which the intellect adheres in opinion:

d2a. is ACTUAL,

d2b. and therefore CAN PRODUCE ACTUAL FEAR. (Cf. Richard: La probabilité morale et la philosophie, c.11, pp.45ss).

337. DEFINITION OF PROBABLE PROOF: Bearing in mind what has been said regarding the nature of opinion:

A. We can describe PROBABLE BRQOF as:

- a. An ARGUMENTATION WHICH CAN GENERATE OPINION ONLY.
- b. or a SYLLOGISM MAKING ONE OPINION.

B. But its ESSENTIAL DEFINITION is: AN ARGUMENTATION WHICH INFERS A CONCLUSION FROM PREMISES OF WHICH ONE OR BOTH IS MERELY PROBABLE.

a. It is sufficient indeed that one premiss be only probable, in order that the conclusion be impeded from having certitude; since the conclusion of every syllogism follows always the weaker part.

b. But:

b1. just as the object of opinion, as said above (n.536, B.b), is that which is worthy to be approved, or the CONTINGENT.

b2. so "probable premiss" MEANS THE SAME AS CONTINGENT (i.e. which might be not true).

338. NOTION AND DIVISION OF THE CONTINGENT: Accordingly here it is necessary to explain the notion and division of the contingent.

A. CONTINGENT is THAT WHICH CAN HAVE ITSELF OTHERWISE.

B. But the contingent is twofold, to wit:

- a. The ONTOLOGICAL contingent,
- b. the contingent BY MANNER OF ACCEPTATION.

C. The ONTOLOGICAL contingent is that which is contingent by contingency of the very THING itself; or, in other words, something is ontologically contingent when the very thing itself might be otherwise. But this is twofold. to wit:

a. The contingent with positive - though not necessary - determination, or the NATAL contingent (contingens NATUM). which has in the subject an innate cause, such as:

a1. The innate or acquired inclinations of our nature: and thus contingent are these propositions: 'Parents love their children\*' and 'Mathematicians multiply Correctly'.

a2. The laws of nature: and thus contingent are these propositions: 'Men do not live for ten years without taking food', and 'Men are killed by being boiled in oil'.

b. The contingent to either (contingens ad utrumlibet), which is found in things according to MATERIAL cause, as water is contingent to hot or cold, and as plasticine is contingent to this shape or that. (Cf. Albert the Great: Metaphys. I.VI, tract.II, c.3). Hence if one of the possibles in which are in the potency of a material cause is actuated, there arises a contingent WHICH IS-IN (quod inest), v.g. heat in water, or cubeness in plasticine. Such is the contingency of the human will. And to this contingent is reduced the contingent OF THINGS or of phenomena.

b1. Hence this contingent is found in the natural sciences which do not abstract from matter: thus its contingent or probable is this proposition 'every metal conducts electricity'.

b2. To opinion also pertain certain judgments of in-be HERE AND NOW. (v.g. 'I am thirsty', 'I am hungry').

D. But the contingent ACCORDING TO MANNER OF ACCEPTATION is found in matter ontologically necessary, when it is known only through a medium not necessary in the order of knowledge.

a. In other words, something is contingent according to manner of acceptance;

a1. when the THING itself is necessary,

a2. but the medium through which we know it does not manifest its necessity, but manifests it as worthy to be approved, yet leaving room for fear that it might not be so.

b. Contingent according to manner of acceptance (i.e. not according to the thing itself, but according to our knowledge of it) is every universal proposition which is not apodictically or evidently proved.

## ARTICLE TffO.

## THE TWO PROBABLE OR DIAIECTICAL SYLLO&amp;ISMS.

339. ENTHYMEME AND EPIGHEIRIME: The two probable or dialectical syllogisms are the enthymeme and the epicheireme.

A. These have been spoken of above:

a. where **it** was explained that:

al. the enthymeme is a syllogism whereof one premiss is left unexpressed (n.294, C);

a2. the epicheirone is a syllogism in which one premiss, or each of the premisses, contains its proof (n.296),

b. But now we deal with them ON THE PART OF THEIR MATTER.

B. Though each of these syllogisms is found also in necessary matter, nevertheless:

a. because debaters and orators who speak of contingent things make great use of them,

b. they are rightly considered by Aristotle as probable syllogisms.

340. THE ENTHYMEME; The enthymeme, by reason of its matter is, according to Aristotle, distinguished from demonstration in this "that it draws conclusion from likelihoods and from signs, but not from the proper principles of things". (Analyt. Priora, CXXVII).

A. For example, from the uttered likelihood: 'Parents love their children\*', this enthymeme is constructed:

'Parents love their children.

Therefore Sempronius loves his son Titus'.

B. "But now, because enunciations which are formed from likelihoods and signs, are not utterly certain, but contingent, or probable, therefore a syllogism which is composed from them begets probable knowledge. Accordingly it is clear that the enthymeme differs from the strict syllogism, not by reason of its form, but by reason of its matter:

a. "because the syllogism properly so-called or demonstrative syllogism proceeds from necessary principles, and therefore has a quite certain conclusion,

b. "but the enthymeme, since it is composed from probable enunciations, begets a probable conclusion.

C. "True it is,

a. "nevertheless, that that arises:

al. "not from the nature of the anthymone,

a2. "but rather from the utility of orators and debaters, whom it often suits to omit one or other premiss;

b. "wherefore Aristotle called the enthymeme also the oratorical syllogism." (Sanseverino: Instituciones seu Elements Philosophiae, vol, I, p.108, n.148),

341. THE EPICHEIREME: "The epicheireme also by reason of its matter differs from the syllogism properly so-called, and on account of this reason it was by the same Aristotle called the dialectical syllogism.

A. "And indeed orators;

a. "just as sometimes in their arguments they omit some part, which can easily be understood without being expressed, and construct enthymemes,

b. "so sometimes to increase the force of their speech, support and expand the single parts with these and those reasons, and construct those argimentations, which we call epicheiremes.

B. "It is at once evident that the reasons which are added to the parts of the argument;

- a. "are:
  - a1. "not new parts of the same argument; for it is impossible that some argument be composed from more than three parts,
  - a2. "but are new arguments;
  - h. "so that the epicheireme is constituted:
  - hi. "not from one argument,
  - h2. "but from several gathered into one aggregation." (Sanseverino: *ihid.* n.149).

### ARTICLE THREE.

#### THE PRINCIPLES OF THE PROBABLE SYLLOGISM.

342. PROBABLE PRINCIPLES: The principles of which the premisses of a probable or dialectical syllogism consist are of two genera, to wit, mediate and immediate.

A. Principles MEDIATELY probable are those which themselves must be proved by means of a dialectical syllogism, which is based upon principles immediate!;" probable.

B. But principles IMMEDIATELY probable are those which are taken from the diverse probable sources, ('topoi', 'loci\*').

a. These sources are either INTRINSIC (probable FROM THEMSELVES) or EXTRINSIC.

h. INTRINSIC sources are either probable IN THEMSELVES or probable FROM A SIMILAR.

hi. The PROBABLE IN ITSELF or what seems immediately probable:

h1a. seems probable either to all or not to all.

h1h. Here it is to be remembered that opinion extends itself to every contingent, and thus the immediate data of the senses is an object, not of science, but of opinion. (Cf. n.358, C.h2).

h1c. Hence:

h1d. Among probables, which seem to all probable, are:

h1ola. all immediate contingent data (v.g. that I am here and now thirsty);

h1clh. those things which "immediately occur on the surface or in the externals of a thing" (v.g. that heavy black clouds lying at a low altitude are a sign of early rain: for such they are in common estimation).

h1c2. But probables which seem such, not to all, but to some, are those which "are not on the surface but in some fashion beneath the surface" (Albert the Great: *Topic, lib.I, tract.I, c.II*).

h1c2a. But if they are not so far beneath the surface that they cannot be apprehended by some without reasoning, they are probable to the wise only: v.g. many symptoms whereby physical or pathological facts are connected.

h1c2h. But if they are so far beneath the surface that they require art, they are known, not to all the wise, but to the more illustrious only.

h2. But the probable FROM A SIMILAR is:

h2a. either probable through analogy (cf. n.313), as when it is probable that James will be cured of his headache by this remedy, because Henry was cured of his headache by this remedy.

h2h. or through resemblance to a contrary, as when it is probable that Thomas who suffers from diabetes and does not take insulin will not be cured, because Paul who suffered from diabetes and took insulin was cured,

c. EXTRINSIC sources are the diverse arts and sciences, from which are had probable principles which are conclusions of some science or art,

c1. These probable principles are based ON AUTHORITY.

c2. For authority is the cause of the probability of what is probable:

c2a. not in itself.

c2h. but extrinsically

343. SCHEMATIC SUMMARY: What has been said regarding the principles of the probable syllogism may be thus schematically recapitulated

either MEDIATELY probable.

either TO ALL.

Probable principles are

either probable IN THEMSELVES. and then

either TO ALL THE WISE.

or TO THE WISE only, and then

either from DCTRINSIC sources, and are

or TO THE MORE ILLUSTRIOUS ONLY.

or IMMEDIATELY probable: these are taken

or probable FROM A SIMILAR, and then

either BY ANALOGY.

or THROUGH LIKENESS TO A CONTRARY.

or from EKTRINSIC sources: Authority according to arts and sciences.

SECTION SIX.

CERTAIN OR SCIENTIFIC PROOF, THAT IS, DEMONSTRATION, IN ITSELF.

344. ORDER OF PROCEDURE: The human mind, in knowing truth, can, progressing beyond probability, arrive at certitude, which is the most perfect state of mind with respect to truth.

A. Note that:

a. It pertains to defensive metaphysics to defend the value of our knowledge.

b. Here accordingly, we give attention only to the logical problem, for which consideration suffices the fact of certitude admitted by common sense.

B. Therefore:

a. having dealt with sophistic and probable proof,

b. we come now to deal with CERTAIN proof. What is called DEMONSTRATION.

C. As observed earlier (nn.239, 319), certain or scientific proof or demonstration will be treated in four sections as follows;

- a. The present section will deal with certain or scientific proof IN ITSELF.
- b. The seventh section will deal with the PREPARATION of scientific proof.
- c. Thereafter will be treated the EPPECT of scientific proof, viAiih effect is SCIENCE. Regarding which:
  - c1. Section eight will deal with science IN GMERAL.
  - c2. Section nine will deal with science IN SPECIAL.
- D. The present section, dealing with demonstration in itself:
  - a. will expose:
    - al. First, the nature of certain proof or demonstration.
    - a2. Secondly, the division of demonstration.
  - b. Hence the following order :-

Its **nature,....Chapter** thirty.  
 On certain proof  
 or demonstration  
 Its **division.....Chapter** thirty-one.

### CHAPTER THIRTY.

#### NATURE OP CERTAIN OR SCIENTIFIC PROOF, or DEMONSTRATION.

345. NOTION OP CERIIUDE: Just as opinion, to which probable proof is ordered, is an ADHESION of the mind, so also is certitude, to vdiich CERTAIN proof is ordered, an ADHESION of the mind.

A. But certitude differs from opinion in this, that certitiide bespeaks the FIRMNESS of an adhesion excluding fear of erring.

B. But the fear of erring is excluded by the very firmness or NECESSITY OF THE OBJECT.

- a. Y/herefore, for certitude aire required these three:
  - a1. NECESSITY OF THE THIN&. which cannot be otherwise: for example:
    - ala. necessity of the identity between the sum of the angles of a euclidian triangle and the equal of two right-singles.
    - alb, necessity of the diversity between the magnitudes of the angles of a scalene triangle.
  - a2. KNOVYLEDGE by the intellect of this necessity: for the object is THE THING AS IT IS PRESI T TO THE MIND through knowledge,
  - a5. EXCLUSION OF FEAR of erring, and indeed:
    - a3a. not a subjective exclusion, i.e. an exclusion due to subjective causes, as in false or erroneous persuasions;
    - a3b. but an OBJECTIVE exclusion, that is, issuing from the object,
- b. ^Yhich may be thus summarized schematically:-

#### NECESSITY OF THE THING

Certitude is a  
 FIRM ADHESION of KNOWLEDGE by the intellect of this necessity.  
 the mind, for  
 which are  
 required:

EXCLUSION OP FEAR OP ERRING	not indeed subjective exclusion  but OBJECTIVE exclusion.
--------------------------------	---

C. Therefore the genuine concept of certitude must be correctly distinguished from other improper acceptations of the term 'certitude'. For certitude can be taken IN THREE WAYS:

a. "Some certitude is of the object itself according to its real being or in relation to the divine intellect.

a1. "And such certitude can well be along with our opinion regarding such an object, as if, v.g, the Pope is really dead, but I only opine that he is dead.

a2. "And the reason is, because such certitude of the object offers nothing to the intellect. For, as far as the manner of judging is concerned, even if the Pope were alive, I would opine that he is dead.

b. "Another certitude can be considered solely on the part of a knower, who according to his temper without any probable reason wantonly adheres to some affirmation or negation.

b1. "And such (certitude) is rather a wanton inhesion of the one who assents, than true certitude, although the one who assents may say that he is most certain.

b2. "and in this fashion some heretics adhere more firmly to their errors - nay, more, they sometimes even suffer death for testimony of them - than to other truths.

c. "There is a THIRD CERTITUDE OF ASSENT WHICH IS EFFECTED FROM THE CERTITUDE OF THE OBJECT WHICH IS KNOWN AS CERTAIN UNDER A FORMAL CHARACTER THROUGH A LIGHT AND HABIT CERTAINLY APPROPRIATELY INCLINING TO AN ASSENT TO THE THING WHICH THUS HAS ITSELF." (Bannez; Comment, in Summa Theol. . f] 1, 5).

c1. This is the proper notion of certitude.

c2. and it is with certitude thus understood, leaving aside the other improper acceptations, that we are concerned here.

D. Accordingly, CERTITUDE, properly taken, is defined: THE STATE OF THE MIND ADHERING FIRMLY. OR WITHOUT FEAR OF ERRING. TO A TRUTH.

346. DEFINITION OF CERTAIN PROOF OR DEMONSTRATION: Accordingly certain proof or demonstration is proof which causes certitude properly taken, as exposed above.

A. And, since every proof is effected by means of premisses which are causes of the conclusion;

a. therefore certain proof or DEMONSTRATION can be described; a SYLLOGISM EFFECTING SCIENCE (syllogismus faciens scire).

b. For SCIENCE is CERTAIN KNOWLEDGE THROUGH CAUSES.

B. But DEMONSTRATION IS DEFINED, along with Aristotle; a SYLLOGISM CONSISTING OF (PREMISES WHICH ARE) TRUE. FIRST AND IMMEDIATE. MORE KNOWN THAN, PRIOR TO. AND CAUSES OF. THE CONCLUSION; or, more briefly: a SYLLOGISM INFERRING A CONCLUSION FROM TRUE AND NECESSARY PREMISES.

a. In the Aristotelic definition, those terms which are added, to wit: "first and immediate", "more known" and "prior" - are nothing else than the general conditions of proofs;

a1. For in every proof, the premisses cannot be provable unto infinity; and therefore they must be indemonstrable, at least mediately.

a2. Likewise the premisses in every proof:

a2a. must be more known than the conclusion:

a2a1. whether according to themselves and to us,

a2a2. or at least to us;

a2b. because they are the medium whereby the conclusion becomes known.

b. Note moreover that certain proof or demonstration, like every proof:

b1. supposes a GOOD illation,

b2. and for that reason is it said of the premisses:

b2a. that they are CAUSES of the conclusion,

b2b. or that they INFER the conclusion.

347. THREE WAYS IN WHICH PREMISES MAY BE NECESSARY; But since the formal and specific element of certain proof or demonstration is NECESSARY premisses, something further is to be said about necessary premisses. For in three ways can premisses be necessary, to wit:

- A. When the predicate is said OF THE SUBJECT, EVERY MAN ALWAYS (as 'rational' or 'endowed with senses' is said of every man and always).
  - a. For the conclusion of a certain proof or demonstration cannot have itself otherwise;
  - b. Therefore:
    - b1. the predicate must befit the subject every and always:
      - b1a. not only in the conclusion,
      - b1b. but also in the premisses;
    - b2. since the conclusion always follows the weaker part (n.249).
- B. When P of the premisses is said 'PER SE' of S of the premisses (nn.229-230). Which is self-evident.
- C. When UNIVERSALLY P is said of S, or «PER SE' PARTICULARLY. or ACCORDING TO THAT WHICH IT IS (secundum quod ipsum), i.e. convertibly. (Of. n.230, C).

#### CHAPTER THIRTY-ONE.

##### DIVISION OF CERTAIN PROOF OR DEMONSTRATION.

348. DEMONSTRATION »A PRIORI' AND »A POSTERIORI': In every proof the premisses are the causes of the conclusion in the order of knowledge; for they EFFECT science or opinion.

- A. But these causes in the order of knowledge:
  - a. may be together the causes in the ontological order,
  - b. or causes in the order of knowledge only.
- B. Let us take:
  - a. this example:
 

'Every spiritual being is immortal.  
But human soul is spiritual.  
Therefore human soul is immortal'.
  - b. and this example:
 

'The world exists.  
But the world does not exist without a cause.  
Therefore a cause of the world exists'.
- C. In both examples the premisses are the logical causes, or causes in the order of knowledge, of the conclusion. For the conclusions have evidence from the premisses.
- D. Yet nevertheless the premisses have themselves otherwise in each in either example.
  - a. In the former M ('spiritual') is the ONTOLOGICAL cause, both of 'human soul', whereof it expresses the formal cause or nature, and of immortality which is a proper act of spirituality.
    - a1. Wherefore in this example the premisses are:
      - a1a. not only the logical causes of the conclusion,
      - a1b. but also the ONTOLOGICAL causes of it.
    - a2. But;



a2a. since causes are prior to effect,  
 a2b. such demonstration is called demonstration 'A PRIORI\* or demonstration THROUGH CAUSES IN BE.

b. But in the latter example, M. (existence of the world), is indeed the cause of the knowledge of the existence of a cause of the world, but is not the cause of the existence of that cause. For, if the cause of the world did not exist prior to the world, the world would not exist.

b1. Wherefore in this example, the cause of the knowledge of the conclusion:

XS\_MOT THE ONTOLOGICAL CAUSE of the existence of the cause of the world,

bib. but is an EFFECT of the cause of the world.

b2. But:

b2a. since in the ontological order an effect is posterior to its cause,

b2b. such demonstration is called demonstration \*A POSTERIORI\* or demonstration THROUGH EFFECT.

349. DIVISION OF \*A PRIORI\* DEMONSTRATION; But let us further consider 'a priori' demonstration:

A. Let us take this example:

'A being composed from soul and body is mortal.

But man is composed from soul and body.

Therefore man is mortal^

B, In this example, the major expresses the reason on account of which or wherefore beings are mortal, and this reason is employed as the MEDIUM of demonstration. Wherefore the demonstration not only tells that man is mortal, but tells also on account of which cause man is mortal. Therefore this demonstration is called DEMONSTRATION WHEREFORE (demonstratio propter quid - demonstration why).

a. This demonstration is had whenever the demonstration is made through a cause convertible with the effect, i.e. whenever the demonstration is made through a cause so related to the effect that together the cause infers the effect and the effect infers the cause (as, for example, in an equilateral quadrilateral the cause \*four equal angles\* infers the effect \*equal diagonals\*, and together the effect \*equal diagonals\* infers the cause \*four equal angles\*; or as, for example, the cause 'composition from contraries\* infers the effect 'corruptibility\*, while together the effect 'corruptibility\* infers the cause 'composition from contraries'); or, again in other words, whenever the demonstration is made through a cause given which the effect must be had and without which the effect cannot be had.

a1. For then the cause is said of the effect:

ala. either in the first manner of saying 'per se' primarily,

alb. or in the second manner of saying 'per se' primarily,

ale. or in the fourth manner of saying 'per se'.

a2. And then it manifests;

a2a. either its specific nature,

a2b. or its property ,

a2c. or its proper act.

a3. And in each Qo^e is manifested the reason on account of which in the conclusion P befits S,

b. Therefore demonstration Y/HEREFORE (propter quid) is had:

b1. not only when the demonstration is wrought through a PROXIMATE cause, - as in the example given - ,

b2. but:

b2a. also:

b2a1. whenever the demonstration is wrought through a REMOTE cause,

b2a2. provided IT IS A CAUSE CONVERTIBLE WITH THE EFFECT.

b2b. Thus:

b2b1. 'every spiritual substance acts from free choice' can be assumed for demonstration wherefore, even though it is from a remote cause: for a spiritual substance acts not from itself, but by the medium of its facilities. (Cf. In Post. Anal., ed. Leonina, lib. I, c. 13, lect. 25, nota t, p. 239; p. 234' notab).

b2'b2. As in this example:

'Every spiritual substance acts from free choice.  
But human soul is a spiritual substance\* .  
Therefore human soul acts from free choice\*.

c. "But it is to be known that when in demonstration" (wherefore)  
"a passion is proved about a subject through a medium, which is the definition, it must needs be that the first proposition, whose predicate is the passion and whose subject is the definition, which contains the principles of the passion, be 'per se' in the fourth mode; but the second proposition whose subject is the subject itself and whose predicate is the definition itself, (must needs be) in the first mode. But the conclusion, in which the passion is predicated of the subject, is 'per se' in the second mode." (in Post. Anal. lib.I, c.VI, lect.13).

cl. "Let, for example, what is to be demonstrated be that to man befits this passion or property, namely, capability of science, and let it be demonstrated in this way:

"\*A rational animal is capable of science.  
But man is a rational animal.  
Therefore man is capable of science."

cla. "In this syllogism the medium assumed is rational animal; which is the definition of the subject, namely, of man, about which is to be proved, and is proved, the passion, namely, capability of science.

clb. "Now in the first or major proposition the definition of the subject, namely of man, is the subject and the passion is the predicate,  
clc. "But in the second or minor proposition, the subject is that very subject of which the passion is to be proved and is proved, and the predicate is the definition itself.

cld. "But:

cld1. "the passion or capability of science is said in the major proposition about rational animal in the fourth manner of saying 'per se';  
cld2. "and it is said of man in the conclusion in the second manner of saying 'per se';

cld3. "lastly in the minor proposition rational animal is said of man in the first manner of saying 'per se'." (in h.1., ed.Leonina, t.I, p.189, nota 2).

c2. In this demonstration the conclusion cannot be in the first manner of saying 'per se', for "since science is properly of **conclusions**, what are properly called scientific knowables (soibilia) are the conclusions of demonstration, in which passions are predicated of their proper subjects. But proper subjects are not only placed in the definition of accidents, but also they are causes of them. Wherefore the conclusions of demonstrations include two ways of saying 'per se', to wit, the second and the fourth." (in Post. Anal. lect.IX, n.syi)

c2a. The predicate of a conclusion in the first manner of saying 'per se' would not be a proper passion of the subject, but its definition, and then there would not be in the conclusion another truth than in the premisses. So that the syllogism would be merely an EXPLICATIVE syllogism, (Cf. n.300j cf. Tonquedec: La Critique de la connaissance, p.524),

c2b. Similarly if the conclusion is in the second manner of saying 'per se', the major must be in the fourth manner; otherwise the conclusion would be a mere EXPLICATION of the major. (Cf. n.300).

C. But now let us take another example;

a. Let the example be this;

'Everything which ages is corruptible.  
But a body ages.  
Therefore a body is corruptible'.

b. Here there is not had demonstration wherefore (propter quid):

bl. because the demonstration is not wrought through proper cause convertible with the effect; - for the proper cause of corruptibility is not ageing, but composition from contrary elements - ;

b2. but it is wrought through a common cause.

c. In this case:

cl. the demonstration;

cla. proves only that the predicate is in the subject, i.e. that corruptibility is in body,

clb. but it does not tell on account of which cause; in other words, it does not tell why.

c2. And therefore such demonstration is called DEMONSTRATION THAT (demonstratio quia) or DEMONSTRATION THROUGH NON-CONVERTIBLE REMOTE CAUSE.

350. DIVISION OF 'A POSTERIORI' DEMONSTRATION; Let us take this example again:

'The world exists.

But the world does not exist without a cause.

Therefore a cause of the world exists'.

A. In this example we not only have that the world has some cause, but that this cause is uncaused, and therefore that it agrees only analogically with the effect.

a. Then it is legitimate to take only analogous concepts of the nature and perfections of the cause from the knowledge of the nature and perfections of the effect.

b. Thus it happens in Theology. For creatures are distant unto infinity from God in perfections;

b1. "consequently knowledge of the perfections of creatures infers indeed the existence of perfections in God;

b2. "but because the perfections in God are of an infinite nature and the perfections of creatures are absolutely **finite**,...it follows that from creatures we can know about the perfections of God;

b2a. "that they are,

b2b. "but not what they are in themselves." (in Post. Anal. ed. Leonina, p. 240, nota).

c. This 'A POSTERIORI' demonstration is called ANALOGOUS demonstration.

B. But 'a posteriori' demonstration is called UNIVOCAL "if the effect is univocal with its **cause**..

a. "It can lead us to a knowledge, whether specific, or generic, of the nature of the cause, according as (the effect) agrees univocally in species or genus with the cause." (ibid.).

b. Thus from the knowledge of a man is known the nature of his father.

351. DIRECT OR OSTENSIVE DEMONSTRATION AND INDIRECT DEMONSTRATION: The demonstration so far set forth in the examples given show that the predicate befits the subject, and for that reason they are called OSTENSIVE or DIRECT demonstration, and they have place only with regard to propositions NOT SELF-EVIDENT (non per se notas).

A. But if we wish, by some demonstration, to manifest SELF-EVIDENT propositions (propositiones per se notas), we must employ INDIRECT, or APAGOGIC demonstration, also called demonstration THROUGH THE ABSURD. Which shows through IMPOSSIBLE CAUSES or through IMPOSSIBLE EFFECTS that P befits S.

B. Accordingly:

a. INDIRECT or APAGOGIC demonstration is a demonstration which shows:

a1. that P befits S,

a2. from this, that if P did not befit S, then:

a2a. either there would be had;

a2a1. a CAUSE which cannot be had.

a2a2. or an EFFECT which cannot be had;

a2b. Or there would not be had:

a2b1. a CAUSE which must be had.

a2b2. or an EFFECT which must be had.

b. Thus INPIEECT or APAGOGIC demonstration proceeds in these four ways, to wit:

b1. First way;

b1a. Thus:

•If effect is had, CAUSE IS HAD.  
But CAUSE CANNOT BE HiiD.  
Therefore effect is not had.\*

b1b. Whereof this is an example:

'If a square has unequal diagonals. IT HAS UNEQUAL ANGIES.  
But IT CANNOT HAVE UNEQUAL ANGLES.  
Therefore it has not unequal diagonals.\*.

b2. Second way:

b2a. Thus:

'If cause is had, EFFECT IS HAD.  
But EFFECT CANNOT BE HAD.  
Therefore cause is not had.'

b2b. Whereof this is an example:

'If a square has unequal angles, IT HAS UNEQUAL DIAGONALS.  
But IT CAENCT HAVE UKEBUAL DliiCCMALS.  
Therefore it has not unequal angles\*.

b3. Third way:

b3a. Thus:

'If effect is not had, CAUSE IS NOT HAD.  
But CAUSE MUST BE HAD.  
Therefore effect is had.'

b3b. Whereof this is an example:

'If a square has not equal diagonals, IT HAS NOT EQUAL ANGLES.  
But IT MUST HAVE EQUAL ANGLES.  
Therefore it has equal diagonals'.

b4. Fourth way:

b4a. Thus:

'If cause is not had, EFFECT IS NOT HAD.  
But EFFECT MUST BE HAD.  
Therefore cause is had.\*

b4b. Whereof this is an example:

'If a square has nco equal angles, IT HAS NOT EQUAL DIAGONALS.  
But IT MUST HAVE EQUiIL DIAGONiJS.  
Therefore it has equal angles\*.

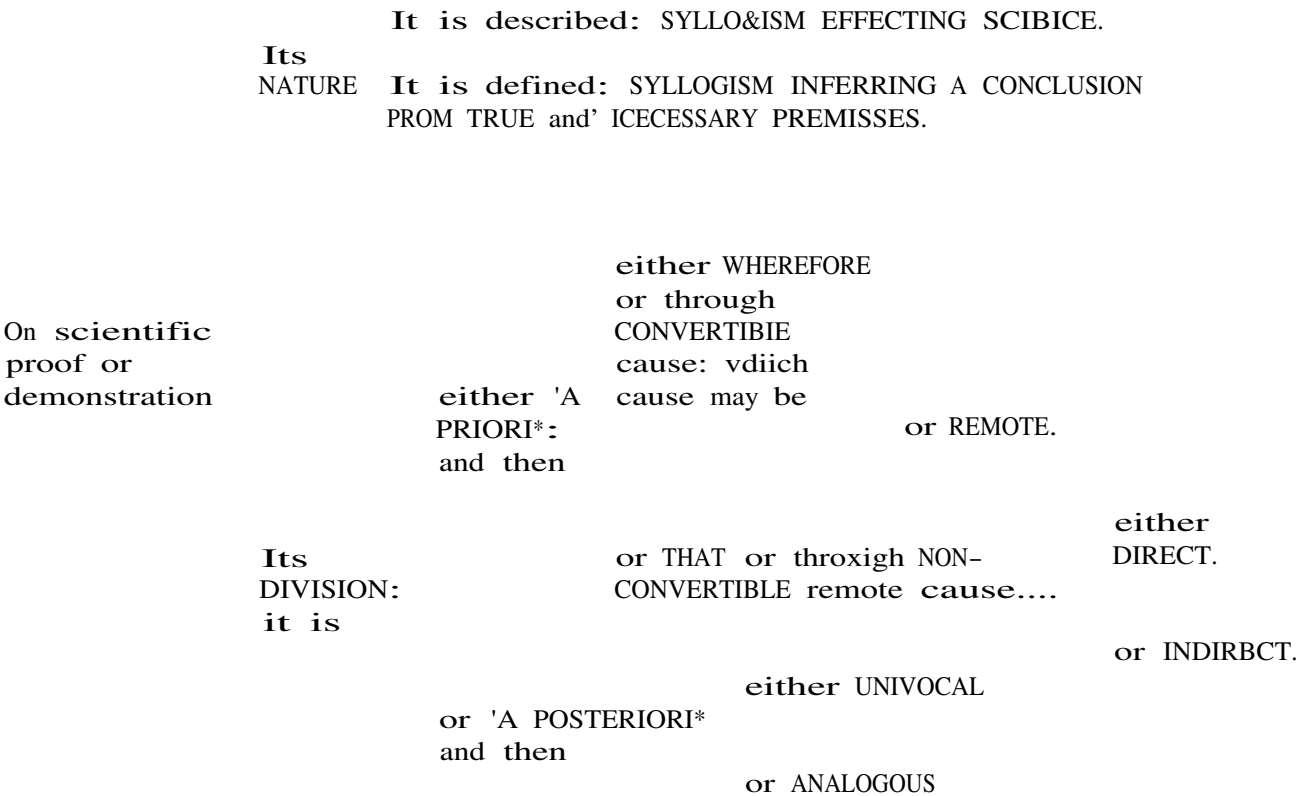
C. Wherefrom it appears that INDIREGT or APAGOGIC demonstration may be:

a. either THROUGH CAUSES, and therefore 'A PRIORI\*'. and even through causes convertible with the effect, so that it may even be demonstration WHEREFORE (propter quid); as in the first (B.b1) and third (B.b3) examples given above.

b. or THROUGH Jiaj^JJECTS. and therefore 'A POSTERIORI'; as in the second (B.b2) and fourth (B.b4) examples given above.

SCHEMATIC SUMMARY.

352. SCHEMATIC SYNOPSIS: Accordingly, the contents of the fore-going section may be thus schematically summarized



SECTION SEVENTH.

THE PREPARATION OF SCIENTIFIC PROOF OR DEMONSTRATION,

OR

THE DISCOVERY OF PRINCIPLES.

353. ORDER OF PROCEDURE: Having dealt with the nature and division of certain proof or demonstration, we must deal now with the preparation of it.

- A. This treatment will deal:
  - s.\* First. with those things which must be known before demonstration, i.e. with the fore-knowns to demonstration.
  - b. Secondly. with the origin of first principles. e
  - c. Thirdly, with the discovery of scientific laws.

3. Accordingly this section will proceed in the following order

- The foreknowns to demonstration..Chapter thirty-two.

On the preparation for The origin of first principles.Chapter thirty-three.

demonstration The discovery of scientific laws.Chapter thirty-four.

CH/APTER THIRTY-Tfo.

THE POEEKNOWNS TO DEMONSTRATION.

354. ORDER OP PROCEDURE: This treatment of those things which must be known before demonstration:

- A. Will consider:  
First, the necessity of knowledge of some things before demonstration.  
Secondly, which things must be known before demonstration,  
e. Thirdly, the evidence of the premisses.  
d. Pourthly, the diverse species of principles of demonstration.

B. Hence the following order:-

	Necessity of some foreknowns	Article one.
On the foreknowns to demonstration	Which are the foreknowns.	Article two.
	The evidence of the premisses	Article three.
	Diverse species of the principles	Article four.

ARTICLE ONE.

NECESSITY OP SOME POREKNOWNNS.

355. SOME THINGS MUST BE KNOWN BEFORE DEMONSTRATION: This is evident both from the nature of demonstration, and from the actuation of our intellect through demonstration.

- A. For demonstration is effected through things more known TO US (quoad nos), as appears from the nature of demonstration. (Cf. n.346, B).

B. Moreover:  
a. By means of demonstration, our intellect is reduced from potency (i.e., from this that it can know the conclusion) to act (i.e. to this that it does know the conclusion).  
b. But no thing iS reduced from potency to act save through being in act:  
b1. just as water is not reduced from 'can-be-hot' to 'does-be-hot\*' save through some being (v.g. fire) which does-be-hot;  
b2. which means that in the order of knowledge reduction to act is through some actual knowledge, i.e. through some FOREKNOWN.

356. "BEFORE DEMONSTRATION" : Note that:

- A. It is said that some things must be laiown before demonstration,

B. Not before any knowledge whatsoever: for then knowledge would be quite impossible; for there would be regress unto infinity, which is repugnant.

## ARTICLE TWO.

### WHICH ARE THE FOREKNOWNS.

357. CONCLUSION; As will appear from what will be here said (nn.358-359), THIS NECESSITY THAT SOME THINGS BE FOREKNOW CONCERNS THE TRUTH OF THE PREMISES AND KNOWLEDGE OF SUBJECT AND PREDICATE.

358. THE TRUTH OF THE PREMISES: The truth of the premisses must be foreknown:

A. Because they are the CAUSES of the truth of the conclusion.

B. Wherefore:

a. Also of S and P must something be foreknown;

b. for otherwise the truth of the premisses would not be foreknown.

359. WHAT MUST BE FOREKNOW OF SUBJECT AND PREDICATE; However, of concepts there is a twofold knowledge, to wit: THAT THEY ARE and WHAT THEY ARE.

A. But of the SUBJECT of the conclusion both THAT IT IS and WHAT IT IS must be foreknown.

a. THAT IT IS indeed: for in every demonstration P is said to be-in S. Which supposes that it be foreknown about S that it is; for otherwise nothing could be affirmed about it. But this is to be taken DIVERSELY;

al. In RATIONAL science:

ala. whose S abstracts from space and time,

alb. it suffices that about S it be foreknown that it is in OBJECTIVE be (i.e. that it is in the order of possible and knowable essences).

a2. But in POSITIVE science:

a2a. whose S depends upon time and space,

a2b. it is necessary that about S it be foreknown that it is in the ACTUAL be of nature, i.e. that it exercise be in time and space.

b. And also WHAT IT IS; but DIVERSELY;

b1. In 'a priori' demonstration it is necessary that about S be foreknown the 'what of the thing' or its real definition. (Cf. nn.167-168). For this demonstration is made by the medium of an M;

b1a. which is either the DEFINITION of S,

b1b. or its PROPERTY; which is manifested by its real definition.

b2. But in 'a posteriori' demonstration, which is through effects:

b2a. it suffices that about S be foreknown the 'what of the name' or its nominal definition (cf. nn.167-168),

b2b. since in this demonstration M:

b2b1. is not the essence or property of S,

b2b2. but is its EFFECT: as is clear from the following example (in Ferison):

'MOVEMENT does not exist without an unmoved-moving-thing.

But MOVEMENT exists in the world.

Therefore something that exists in the world does not exist without an unmoved-moving-thing\*.

B. But of the PREDICATE of the conclusion only WHAT IT IS must be foreknown.

a. Act indeed that it is, i.e. that it is-in S: for this is what is to be demonstrated.

b. Yet indeed WHAT IT IS;

b1. Not however its real definition, because this definition depends on the question 'whether it is' (that it is).

bla. For P is a property (at least in a broad sense) of S.

bib. But into the real definition of a property, enters its proper subject: (thus into the real definition of will enters its proper subject, viz. intellect).

b1c. Therefore the real definition of P supposes answered the question 'whether it is': which, as said above, is not answered before the demonstration but only by means of the demonstration.

b2. Therefore the nominal definition of P suffices.

b2a. Yet this is necessary:

b2b. for otherwise nothing would be known about P: which is repugnant. (Cf. In Prior. Anal, lect.2).

360. THEREFORE NO SCIENCE DEMONSTRATES ITS OWN OBJECT:

From what has been said follows the meaning of the saying: No science proves or demonstrates its own object, but supposes it." Along with CAJETAN we must distinguish:

A. "Whether every SCIENCE, metaphysics as well as geometry SUPPOSES ITS OWN PROPER SUBJECT TO BE, and whether it cannot be proved that it is"

a. Then "the answer **is . that** it cannot be proved, neither 'a priori' nor 'a posteriori'."

b. For about it, it must be foreknown that it is in objective being (n. 359, A. a).

B. "Whether every DEMONSTRATION supposes the proper subject of that demonstration to be? Then "answer is made in two ways:

a. "In the first ( ) that every demonstration" supposes "its subject to be" either in objective being or in real being.

b. "But in another way, **and . better . that** not every demonstration supposes its subject to be:

b1. "since sometimes it seeks it and demonstrates it,

b2. "and this is evident universally in all demonstrations terminating the question 'whether it is'." (In II Post. Anal. c. 1, ad finem dub.).

### ARTICLE THREE.

#### THE EVIDENCE OF THE PREMISES.

361. CONCLUSION: As will appear from the considerations exposed hereunder (nn. 362-364), THE PREMISES OF EVERY SCIENTIFIC DEMONSTRATION MUST BE SELF-EVIDENT (PER SE NOTAE) AND INDEMONSTRABLE, OR, IF THEY ARE NOT SELF-EVIDENT AND INDEMONSTRABLE, THEY MUST BE DEMONSTRATED BY RESOLUTION TO AN INDEMONSTRABLE SELF-EVIDENT PRINCIPLE.

362. PREMISES CANNOT BE DEMONSTRATED UNTO INFINITY:



363. DEMONSTRATION MUST BEGIN FROM CERTAIN SELF-EVIDENT PREMISES; Therefore demonstration must begin from certain SELF-EVIDENT premisses: which, being self-evident, neither need to, nor can, be demonstrated.

364. DEMONSTRATION MUST PROCEED FROM SELF-EVIDENT PRINCIPLES: But if the premisses ARE NOT SELF-EVIDENT (i.e. not known through themselves):

- A. Then they need demonstration.
- B. Which demonstration must be carried back until some self-evident principle is reached:
  - a. for otherwise they would be similarly regress unto infinity,
  - b. whereby would be destroyed the certitude of the demonstrated conclusion.

E p o » n 9 »      9 » b » t u 9

#### .ARTICLE FOUR.

##### DIVISION 3 OF PRINCIPLES OF DEMONSTRATION.

365. EXISTENCE OF SELF-EVIDENT PRINCIPLES SUPPOSED HERE: That there are self-evident principles (principia per se nota), is supposed here, just as it is also supposed that science exists.

- A. This question of whether there be any self-evident principles is dealt with in defensive metaphysics.
- B. Where the existence and value of self-evident principles is defended:
  - a. especially against modern Nominalists, such as Goblots and others,
  - b. who:
    - by reason of this nominalism, denying the certitude of these principles (cf. Goblots: Traité de Logique, pp.327-328),
    - b2. admit them only as hypotheses, because of their utility and practical necessity for thought.

366. DIVERSITY OF SELF-EVIDENT PRINCIPLES; But here it is necessary to distinguish diverse self-evident principles, to wit:

- A. AXIOMS (also called 'dignitates') or FIRST PRINCIPLES OF REASON:
  - a. such as:
    - a1. the principle of identity or of contradiction,
    - a2. the principle of causality,
    - a3. the principle of 'reality, etc....;
  - b. which are:
    - b1. common to all beings,
    - b2. self-evident to all, even to the unlearned or unwise,
    - b3. and naturally known.
- B. OTHER PRINCIPLES, self-evident, not to all, but TO THE WISE OR LEARNED ONLY.
  - a. Such are PHILOSOPHIC principles,
  - b. as, for example, this: 'those things which are circumscriptively in place are bodies'.
- C. PRINCIPLES PROPERT TO THE SCIENCES, or SCIENTIFIC LAWS, which are SELF-EVIDENT TO SCIENTISTS ONLY.
  - a. These are not demonstrated,
  - b. but, as will be explained below, are obtained, in the sciences of nature, by INDUCTION.

scmumc summary.

367. SCHEMATIC RECAPITULATION: The contents of the fore-going chapter may be thus schematically summarized

They are not before all knowledge.

WHETHER THEY BE

But before all demonstration.

On the foreknowns to demonstrator	Concerning concepts:	Concerning S.	That it is	ill OBJECTIVE be: in rational science.
				in ACTUAL be: in positive sciences.
				OF THE THING: in 'a priori' demonstration.
				OF THE NAME: in 'a posteriori' demonstration.
WHAT THEY ARE:	Concerning premisses;	Concerning P.	But what it is	Not that it is; because this is to be demonstrated.
				Not OF THE THING; because this depends on the question 'whether it be*.
				iBut OF THE NAME.

Either they are self-evident.

Or they are demonstrated by resolution to a self-evident principle.

CHAPTER THIRTY-THREE.

ORIGIN OP THE FIRST PRINCIPLES OP REASON AND OP PHILOSOPHY.

368. ORDER OP PROCEDURE; This treatment of the origin of the first principles:

- A. will consider:
  - a. First, the origin of the first principles of reason or dignities.
  - b. Second, the origin of the common principles of philosophy.
- B. Hence the following order:-

of the first principles of reason or dignities.....Article one.  
 On the  
 origin  
 of the common principles of philosophy.....Article two.

## ARTICLE ONE.

## ORIGIN OF THE FIRST PRINCIPLES OR REASON. OR DIGNITIES.

369. DOCTRINE OF KANT AND IDEALISTS; Kant, and idealists generally, teach that:

A. These principles are acquired simply *a priori*, from the mere activity of the intellect.

B. Which opinion logically follows from their theory that in knowledge the knower has itself purely actively.

370. DOCTRINE OF POSITIVISTS AND MODERN NOMINALISTS; On the other hand, positivists and modern nominalists generally:

A. Regard the first principles of reason:

- a. as useful or convenient conventions,
- b. but lacking true certitude.

B. Thus Goblot writes:

a. "There is an infinity of possible geometries, among which the ordinary geometry is the simplest, and for so much, the most commodious. Nothing authorizes us to think that it is the only true one and that the others are false.

b. "It is assuredly the same with all the indemonstrable principles. One may suppose them false, since there is no reason to judge that they are true. They present themselves therefore under the form of alternatives. But of the hypotheses the one is simpler and more convenient than the other.

c. "To choose this hypothesis, is not to affirm it; it is not question of an act of faith, of a belief justified, in default of theoretical reasons, by its practical utility. Rationally, it is neither possible nor necessary to hold as true the indemonstrable principles. It is legitimate to draw the consequences from them, and what is true is that these consequences do result from **them**.

d. "... — The principle of contradiction itself is an indemonstrable. If any axiom seems evident through itself, it is this one. But it is natural that it should appear evident, for, as it is the condition of the possibility of every judgment, as soon as one thinks, one has already taken it as a principle. Nevertheless metaphysicians have shown that we are not constrained to posit it save as a law of thought, and that we do not know if it is also a law of things; some, more daring, have examined the hypothesis that contradiction would on the contrary be the law of being, of the thing in itself. The principle of contradiction also would therefore be a postulate. One could not suppose it false, because then there would no longer be any difference between the true and the false, so that one could no longer think, not even to judge that it is false. But one can understand that the interest of our thought is the sole reason that we have for taking it as a rule. Like all the postulates, it presents itself as an alternative: it is question of taking the more convenient side. But here convenience becomes an imperative necessity, not logical, but practical, and the contrary side an absolute impossibility, not logical, but practical. To reject the principle of contradiction would be to renounce thinking.

e. "The indemonstrables are not truths. They are hypotheses which we have no reasons to hold as true, but have motives to take as rules. They are not logically necessary, but they are necessary to us. Thought must accept the conditions of its own exercise. To make use of our reason, we

are obliged to conduct ourselves as if we were convinced of the rationality of the universe. Science, in its totality, and, with it, all knowledge in general, is affected by relativity. In its ensemble, science is a vast hypothesis, an option, a risk boldly run, an audacity unconsidered at the beginning, but amply justified after the event by success and the legitimate hopes which it engenders." (Coblot: Traite de Logique, ed, 1920, pp,327-328, Cf. Rougier: Les Paralogismes du Rationalisme).

371. THE FIRST PRINCIPLES ARE KNOWN BY ABSTRACTION FROM SENSIBLES: Against all the above mentioned (nn.369-370), it must be said that:

A. The first principles of reason, or dignities, and NEITHER purely 'a priori', NOR conventions, but are IMMEDIATELY known upon their terms being known by abstraction from sensibles.

a. For self-evident or 'per se' known is a proposition:  
a1, whose predicate is included in the notion of the subject,  
a2, and whose predicate, upon the terms being known, is thereby- known to be-in the subject.

b. For the rest, the dignities are propositions whose terms are common things, which no one is ignorant of, such as 'being' and 'non-being', 'violate' and 'part' and the like (I, q.2, a.1).

B. But these terms:

a. Are not constructed by the mind alone, as if the mind were, in knowing,~ purely active, as IUSTITIA continet.

b. Nor are they received by experience alone, as if the mind were, in knowing, purely passive, as POSITIVISTS and EMPIRICISTS contend.

c. But they are known by abstraction from sensibles whereby the mind actively receives its knowledge from sensible experience.

372. NOT BY INDUCTION ARE THE DIGNITIES ACQUIRED: Nor is it satisfactory to say, as some do (v.g. Boyer: Cursus Philosophiae, vol. I, pp.246-254; Hoenen: De origine primorum principiorum scientiae, in Gregorianum, 1933, pp.153-184), that the dignities are acquired BY INDUCTION, even if /-this induction be pronounced natural and rapid.

A. For it is required for induction that the mind does not ascend to a universal principle, unless it has previously affirmed the agreement of P and S IN SOME PARTICULAR CASE.

a. But this is not verified in the case of the dignities. For the human mind knows the universal before the singular.

b. Wherefore it immediately apprehends the universal P and S, which being apprehended, it immediately knows the agreement of the universal P and S, as said above.

B. AND IF IT BE OBJECTED:

a. First:

a1. That this agreement is not known save upon knowledge of the real definition of S and P, which is not immediately known. —

a2. For the answer is:

a2a. That in the case of the dignities, whereof it is question here, S and P, are not, as St Thomas says, unknown to anyone.

a2b. Moreover, as has been said above (n.175), real definition is obtained:

a2b1. not by induction,  
a2b2. but BY ABSTRACTION.

b. Secondly:

b1. That St Thomas says that "UNIVERSALS. from which demonstration proceeds, do not become known to us, SAVE THROUGH INDUCTION", (in I Post. Anal. lect.30).

b2. For the answer is that over and over again St Thomas uses the name 'induction\*' to signify the abstraction of universal CONCEPTS from a particular: which is another acceptance of the name 'induction\*' than v<sup>e</sup>n it is taken as 'inductive argumentation\*': for this latter is concerned about propositions.

b2a. In the <sup>e</sup>text cited, St Thomas is using the name 'induction\*' in the sense of 'abstraction of imiversal concepts': since in this text it is question of universals.

b2b. Moreover St Thomas expressly affirms this in the same passage: "The principles of abstract (things), from which demonstrations in these things proceed, are not manifested to us, save from some particulars, which we perceive by sense. For instance, from this that we see some sensible singular whole, we are led to know what is a whole and a part, and we know that every whole is greater than its own part, by considering this in many." (in I Post. Anal., lect. 307(

C. "What is said here by St Thomas". write the commentators of this text in the Leonine edition (p.259, nota d), "is not to be passed by without philosophical consideration.

a. "For two genera of universals are said by the Angelic Doctor to be got by our intellect by means of induction.;

al. "Of which the first are universal elements, but dividedly and, so to speak, disassociated from each other: 'from this, that we see some sensible singular whole, we are led to know what is a whole and a part'. (Cf. Con.Gent. II, 0.88).

a2. "The others are the same elements compared and composed into a Judgment: 'and we know that every vAiole is greater than its own part'.

b. "Beyond doubt from analysis of viiole is seized its predicate, viz, greater than its own part; but FROM THIS VERY JUDGMMT, does St Thomas mean to say, THE INDUCTION IS NOT EXTRA'IEOUS.

bl. "For he explicitly teaches that so far do we understand that the concept of whole carries with itself something greater thajti any part of it, because we have considered this in many.

b2. "Therefore Just as to our intellect incomplex universals are not manifested save from individiiial sensibles; so the principles of abstract (things) from )nwhich demonstrations in these things proceed, are not manifested to us save from some particulars, which we perceive by sense, as St Thomas asserts immediately before.

c. "BUT ONE MUST PROCEED WITH CAUTION IN THIS MATTER, and the doctrine of St Thomas must be rightly understood. Nor from any other than the holy Doctor himself is the explication of his mind to be taken.

c1. "In the Commentaries on IV Metaphysic., lect.VI, speaking of the knowledge of the first principles, he teaches that the only subjective efficient cause of that knowledge is our intellect, but the objective cause is THE PERCEIVED KNOWNNESS OF THE TERMS, flrom which those principles are composed: 'for from the very natural light of the poietic intellect, the first principles become known; nor are they acquired through reasonings, but ONLY THROUGH THIS. THAT THEIR TERMS BECOME KiTOWN'.

c2. "But from which source do their terms become known? By the aid of the senses. 'LTiich indeed is effected through this, that from sensibles is got a memory and from the memory 'experimentum', and from the 'experimentum', knowledge OF THOSE TEEIMS.' The senses therefore are not properly the cause, but rather are the matter of a cause (and therefore they are necessary), namely, they furnish a sensible, from which the intellect, as the true efficient cause 'per se' of ideas, gets knowledge of those terms. 'Which being known, are lknown such common propositions which are the principles of the arts and the sciences'. They are known from the sole force of the terms and by the mind solely, but not without a determining motive got from the senses.

c3. "Therefore the mind solely is the cause of the knowledge of the principles. Just as the mind solely culls through sense, memory and 'experimentum\*' the universal elements (terms) in singiLLars, (universal elements) from which it composes the principles by the medium of Judgment.

c4. "When therefore St Thomas says in this 'lectio': 'we know that every whole is greater than its own part, by considering this in memory', understand his assertion according to the explanation given by the holy Doctor himself, viz. 'by considering this in many', that is, by getting from experience knowledge of the terms *HOLB* and *PART*, and *IN THM* knowing the relation between one and the other.

c5. "BUT YOU WILL SAY:

c5a. "The terms of certain principles can be had at once, although not without sense and memory, yet without 'experimentum', as are the terms of transcendent principles: 'it is impossible that the same together be and be not', and other such.

c5b. "I answer that it does not affect our question, whether as regards the terms of some principles our mind know, without 'experimentum' in many or in a few, in one singular: for 'experimentum' is a third requisite, where sense and memory do not suffice to the intellect for knowledge of the terms through one sensible. Wherefore the same St Thomas, speaking of the first concepts of the intellect, says that 'at once by the light of the poetic intellect, they are known, through species abstracted from sensibles, in their own right they be complex, as the dignities, or incomplex, as the notion of being, and of one, and such like, which the intellect apprehends at once' \* (De Verit. XI. De Magistro, art. 1)."

c6. For the understanding of the above, NOTE that:

o6a. "BXPBIBNTIM\* seems nothing else than to take something from many retained in memory." (in II Post. Anal. lect.20).

c6b. St Thomas employs the name 'experimentum' to translate the Greek 'empeiria'.

D. This teaching of St Thomas about the origin of the first principles of reason is based on his doctrine of intellectual knowledge apprehending THE UNIVERSAL BEFORE THE SINGULAR.

a. But if there be anyone who holds, along with SCOTUS or SUAREZ, that the human intellect directly apprehends the singular:

b. such a one must attribute the origin of the first principles to induction properly so-called. For:

b1. the singular terms being apprehended,

b2. the intellect immediately makes a singular judgment,

b3. from which it rises to a universal judgment BY GENUINE INDUCTION.

Alr^TGLB TV7Q.

#### ORIGIN OF THE COMMON PRINCIPLES OF PHILOSOPHY.

373. THESE PRINCIPLES ARE KNOWN BY ABSTRACTION FROM SENSIBLES: These principles are concerned about the nature or properties of things.

A. They also are self-evident (per se nota).

B. Therefore:

a. They are known, like the first principles of reason, immediately, upon the terms being by means of abstraction, albeit a more difficult abstraction, known.

b. For whenever P of a proposition is the nature or a property of S, then:

b1. the nature of S and P being known,

b2. P is known to be-in S.

SUBJECTIVISTS.

and IDEALISTS.

Nor commodious conventions, as say POSITIVISTS.

NOT by induction.

BUT by abstraction from sensibles.

## THE DISCOVERY OF SCIENTIFIC LAWS.

B. Hence the following order :-

Their value as principles of proof. **Article two.**

# ORIGIN OF SCIENTIFIC LAWS.

b2. or by deduction.

377. **SCIENTIFIC LMS ARE NOT OBTAINED BY ANALYSIS:** Scientific laws, of which it is question here, cannot be obtained by ANALYSIS of S and P.

- A. For these laws:
  - a. since they are concerned only with the external, empiriological signs of philosophical properties,
  - h. cannot be discovered from analysis of the terms.

- 3. For only Judgments,
  - a. whose:
    - al. P is:
      - ala. either of the essence,
      - alh. or of some philosophical property,
    - a2 of S,
  - h. can be obtained by analysis.

C. For the understanding of this, NOTE what is meant by philosophical or ontological properties on the one hand, and empiriological properties on the other.

a. Let us first consider the TWO analyses which a concept may admit, to wit, ontological analysis or analysis into being on the one hand, and empiriological analysis or analysis into observed phenomena or sensations or operations of observation or of measurement on the other hand. By way of example, "let us try a rigorous ascertainment of a word found both in philosophical and positive contexts...To the question what does the word man mean?"

al. "The answer will be 'rational animal': now, none of the elements of this definition presents a character of irreducible clarity. Take one of them, for instance, animal. What does this word mean? A correct definition would be: 'a living body endowed with sense knowledge', and these are so many terms which badly need clarification. Take one of them, for instance, 'living'. I would say that a body is a living one when it moves itself, when it is the active origin of its own development. If we go any step further, we go beyond the limits of physical thought. In order to render the idea of life clearer, we would have to define it as self-actuation. The concept of self-actuation does not imply any reference to the proper principles of corruptible and observable things: it is a metaphysical concept. Its elements are identity and causality. Identity is the first property of being. Causality can be analysed into potency and act. Identity, potency and act are so many concepts directly reducible to that of being, which is, in an absolute sense, the first and most intelligible of all concepts. We have reached the ultimate term of the analysis, the notion which neither needs to be nor can be defined and which does not admit of any beyond. - This is the kind of analysis that the word man suggests when it is used in certain contexts. Everybody would agree that a discourse which demands such an analysis is a philosophical one.

a2. "But the same word man is often used in contexts which neither demand nor could stem from such an analysis. I happen to find the word man in a treatise on zoology: explaining it in the way we did. Just now would seem perfectly ridiculous. An analysis whose term is the concept of being has obviously nothing to do with the behaviour, the method, the spirit and the principles of the whole discipline we call zoology. Should a univocally-minded philosopher try to enlighten a zoologist by giving him explanations about self-actuation as a particular form of relationship between potency and act, no doubt the zoologist would burst into laughter and declare that all these stories are perfectly nonsensical for him as a scientist. - The zoologist would be right and the philosopher would be univocally-minded. Both philosopher and zoologist consider man, but they have a different way of defining objects and of answering the question what does it mean? For the zoologist, man is a mammal of the order of Primates. How would he define such a term as mammal? A vertebrate characterized by the presence of special glands secreting a liquid called milk. How is milk defined? In terms of colour, taste, average density, biological function, chemical components, etc.

- Here the ultimate and indefinable element is some sense datum; it is the object of an intuition for which no logical construction can be substituted and upon which all the logical constructions of the science finally rest. In some cases, the explanation of a positive definition quickly demands recourse to sense experience. This often happens in the least elaborated parts of science. The elaboration of scientific concepts generally postpones the time when the recourse to sense intuition appears indispensable. But sooner or later it always imposes itself unmistakably. It is the possibility of being ascertained through sense experience which gives the concept its positive



meaning. Every concept is meaningless for the positive scientist which cannot be, either directly or indirectly, explained in terms of sensations" (The Maritain Volume of The Thomist, pp. 90-91).

h. And similarly;

hi. If a mineralogist is asked 'WHAT IS SILVER' he will answer by some such definition as this: 'A metal which is sonorous, ductile, very malleable, highly polishable, having a higher thermic and electric conductivity than any other metal known, melting when heated to 960.5 degrees centigrade, boiling when heated to 2,000 degrees centigrade.'

hla. But if he is asked regarding any one of the elements in this definition: 'WHAT IS IT', then his answer will be a definition of similar sort.

hlh. And ultimately he will be driven back to certain indefinable elements, which will be OBSERVED PHENOMENA or SENSATIONS or OPERATIONS OF OBSERVATION or OF AFFECTION.

hlc. Therefore his concept of silver is ultimately made up from, and is ultimately analyzed into, SUCH EXTERNAL AND OBSERVABLE SIGNS of silver. But WHAT WHICH SILVER IS (i.e. the essence of silver) remains undisclosed to him IN ITSELF, being disclosed and known only in its external and observable signs. He knows indeed what silver is (the essence of silver), for he knows that it is 'that hidden or mysterious something (undisclosed in itself) which exhibits those observable or measureable phenomena'.

bid. These OBSERVABLE SIGNS of an essence, not manifesting what the essence is in itself, but indicating the essence as their own ultimate explicative, without however manifesting how it explains them, and leaving the essence unknown and undisclosed in itself, are called its EMPIRIOLOGICAL PROPERTIES.

ble. They are not philosophical properties, because they are NOT EXPLAINED TO US by the essence, since we do not know how the essence is their reason of being; in other words, because it is not manifest to us, since we do not know the essence in itself, why, or how, the essence exacts them.

b2. But if we knew, not merely in such signs, but IN ITSELF, what silver is so that the essence of silver would IN ITSELF be disclosed to us, and no longer hidden; or, in other words, if we knew the essential predicates of silver, and so could give an essential definition of it; or, again, in other words, if we understood silver in a concept manifesting the specific essence of silver THROUGH ANALYSIS INTO BEING, (so that the ultimate indefinables to which our concept would be resolved would be being, and not observed phenomena or sensations): then:

b2a. from that essence of silver thus understood we would be able to know the properties which that essence exacts; for they would be explained by the essence, since we would know how the essence is their reason of being and therefore why it exacts them.

b2b. These properties, KNOWN FROM THE ESSENCE and EXPLAINED BY THE ESSENCE, are the PHILOSOPHICAL PROPERTIES.

c. Therefore:

c1. whereas the EMPIRIOLOGICAL properties have themselves TO US as mere pointers to, or indicators of, or signs of, the essence, leaving this unknown IN ITSELF, and therefore leaving THEMSELVES unexplained TO US:

c2. PHILOSOPHICAL properties, on the contrary, have themselves as sequent to the essence, which, when known IN ITSELF, explains THEM.

d. therefore:

d1. PHILOSOPHICAL PROPERTIES can be defined: SEQUENTIALLY TAKEN TO THE ESSENCE KNOWN ONTOLOGICALLY OR IN ITSELF.

d2. EMPIRIOLOGICAL PROPERTIES can be defined: EMPIRIOLOGICAL SIGNS OF AN ESSENCE.

378. NOR BY DEDUCTION, IF THEY ARE MORE UNIVERSAL: Nor can these scientific laws be obtained by means of deduction:

A. At least if it is question:

- a. of the more universal laws of the sciences,
- b. and not of particular laws.

- B. For particular laws:
  - a. can evidently be obtained from the more universal laws, by means of deduction.
  - b. For example:
    - b1. from the laws of gravitation, of friction, and of explosive force,
    - b2. can be DEDUCED:
    - b3. the law of the trajectory of some mass projected by some explosive, given such a friction or aerial resistance.

379. **BUT BY MEANS OF INDUCTION:** These universal laws are discovered by means of induction.

A. This indeed is already clear from a sufficient division of possible origins: for analysis and deduction have already been excluded.

- B. However it can be proved directly:
  - a. For, in the more universal laws of the sciences, which are concerned with empiriological properties or with phenomena, by experience alone can P be known to agree with S.
  - b. But:
    - b1. universal judgments whose agreement of S and P can be known by experience alone, can be formed only by induction.
    - b2. For induction is nothing else than discovery, by means of experience, of the agreement of S and P of some universal proposition.

## ARTICLE TWO.

VALUE OF LAWS. DISCOVERED BY INDUCTION. AS PRINCIPLES OF PROOF.

380. **CONCLUSION:** As will appear from the considerations exposed here-under (nn.381-382):

A. THE LAWS, DISCOVERED BY MEANS OF INDUCTION, OF THEIR NATURE (PER SE) ARE NOT DEVOID OF OBJECTIVE CERTITUDE. AND THEREFORE THEY CAN BE ASSUMED AS PRINCIPLES OF SCIENTIFIC PROOF.

- B. This question is of the greatest moment:
  - a. Both:
    - a1. because of the great number who DENY the objective certitude of these laws;
    - a2. and because of the ROLE played by these laws in the sciences.
  - b. For the rest.
    - b1. it is to be admitted, as will be explained later where we shall treat of the physical sciences, that by reason of its MATTER (that is, of the observation and experimentation of facts), the conclusions of induction DO NOT ENJOY objective certitude.
    - b2. Nevertheless it is to be proved:
      - b2a. that this occurs only 'per accidens' (owing to an accidental reason),
      - b2b. but that 'per se' (of their nature) the conclusions of induction enjoy TRUE CERTITUDE.

381. **OPINIONS DENYING THE OBJECTIVE CERTITUDE OF INDUCTION;** But that any objective certitude is to be attributed to induction is denied by:

A. EMPIRICISTS and generally all NOMINALISTS, who accredit to induction only the value of probability:

- Logically indeed do they adopt this attitude:
  - a1. since, by virtue of their nominalism, they reduce law to a mere summation of facts;

a2. wherefore, if the law is extended beyond the cases observed, it can enjoy only probability.

b. This probability:

b1. can indeed be very high,

b2. according as it is based on an invincible persuasion, arising from association, that the future will be like the past.

c. Thus:

c1. HUME

cla. says that, after we have often seen the same connections between things (v.g. between the eating of bread and nourishment of the body, or between the touching of a candle-flame and the feeling of pain), we think that the same connections will be had in the future, or that the future will resemble the past:

cla1. not because we have any objective reason so to think,

cla2. but because through custom we can no longer think otherwise.

clb. And he applies this teaching of his to the principle of causality. (Cf. Enquiry Concerning Human Understanding, Sect. IV, p.II; et praesertim Treatise on Human Nature, B.I, p.III, s.V-VIII, where Hume clearly denies that principles and laws are affirmed on account of any reason intellectually perceived, but says that they are formed by force of association arising from custom).

c2. JOHN STUART MILL speaks not very differently:

c2a. For he says that when we experience some fact in which two are connected (v.g. when we experience that by a flame the finger is burnt):

c2a1. a mental association between these two is formed in us, which association becomes more and more solid by repetition of the experience,

c2a2. with the result that:

c2a2a. the sight or thought of fire suggests to us the effect (burning),

c2a2b. and we come to the general persuasion: 'flame burns the finger'

c2b. But this general or universal proposition is nothing else than a recapitulation and summation of our past experience, with an expectation, based upon that mental association, of the same connection between these two in the future. (Cf. System of Logic: B.II, cc.5-7).

B. Many CONTEMPORARY THEORISTS OF THE SCIENCES. imbued with nominalism:

a. teach that induction:

a1. PROVES a universal conclusion,

a2. but only POINTS TO it or INDICATES or SUGGESTS it.

b. Wherefore scientific laws, acquired by induction;

b1. never enjoy certitude.

b2. but only some degree of probability.

c. For which reason they assign a very great role in science to the CALCULUS OF PROBABILITIES, which is a mathematical act whereby is calculated the degree of probability which a scientific law or universal conclusion of induction enjoys of being fulfilled in any determinate case or in all cases.

d. Which position they adopt, because, on account of their nominalism;

d1. they regard induction as an argumentation of the same nature as the syllogism, considering it to be a "syllogism in reverse"; (cf. n.302);

d2. wherefrom they logically conclude that scientific or incomplete induction does not prove a universal conclusion (cf. n.307).

C. IDEALISTS and SUBJECTIVISTS. who, following KANT, although they admit that induction enjoys absolute value to us or subjectively, utterly deny to it all ontological value:

a. For, according to them, the value of induction is based upon SYNTHETIC 'A PRIORI' principles innate to the mind:

a1. according to KANT, on the principle of efficient causality alone,

a2. to which LACTANUS adds the principle of final causality. (Du fondement de l'induction).

b. Some recent IDEALISTS. such as GENTILE (teoria generale dello Spirito come Atto puro, c.6, 8), and BRUNSCHWIG. teach that the principles and laws:

b1. arise FROM THE ABSOLUTE LIBERTY OF MIND.

b2. and are devoid of true necessity and certitude.

382. THE POSSIBILITY OF ACQUIRING CERTITUDE BY MEANS OF INDUCTION: Against those who deny that any objective certitude is to be attributed to induction (n.381), the possibility of acquiring certitude by means of induction IS TO BE

A. This possibility is based. ON THE PART OF THE SUBJECT, in the nature of our intellect:

a. For our intellect:

al. (even if, in the positive sciences, it knows ESSENCES only in external, empiriological signs, - as, for example, it knows the essence 'silver', not in itself, but only in the external, observable or measureable signs 'sonorous', 'ductile', 'very malleable', 'highly pol<sup>l</sup>shabj<sup>l</sup>^', 'highly conductive of heat', 'highly conductive of electricity\*', 'melting at 960.5 degrees centigrade"', 'boiling at 2,000 degrees centigrade' etc - j,

a2. is necessarily concerned with ESSENCES, i.e. necessarily understands ESSENCES (just as sight necessarily sees colours),

b. in virtue of which necessary concern about ESSENCES, it is capable of passing over from subjective parts to the universal, as it passes in the following example of induction from knowing that the predicate 'melts at 960.5 degrees centigrade' agrees with 'this piece of silver' and 'this piece of silver' and 'this piece of silver' and 'this piece of silver' and 'this piece of silver' to knowing that the predicate 'melts at 960.5 degrees centigrade' agrees with 'silver':

'al  
a2  
a5 melts at 960.5 degrees centigrade.  
a4  
a5

But the universal which relatively to 'melting at 960.5 degrees centigrade' has as its subjective parts:p

a1  
a2  
a3 is silver.  
a4  
a5

Therefore silver melts at 960.5 degrees centigrade.'

B. But THE QUESTION OCCURS;

a. How does the mind make this passage?

b. Or:~ BASING THIS PASSAGE ON THAT OBJECTIVE FOUNDATION, does the mind make it?

c. Or: WHAT LEGITIMACY has this passage?

C. These questions - all of which amount to the same - are diversely answered by authors.

a. Some, with LACHEISSR;

al. Contend that the mind, given that a constant fact has been observed: ala. is, in induction, passing from the major (i.e. from constancy in the observed cases) to the conclusion (i.e. to constancy in ALL cases, to wit, the universal),

alb. by interpreting that constancy by the aid of the principles of UNIFORMITY OF NATURAL CAUSES or of FINALITY: v.g. 'the same natural cause in the same circumstances produces the same effects\*'; 'nature operates in one~and the same way\*'; 'nature is determined to one\*.

a2. But THIS CONTENTION IS FALSE:

a2a. For:

a2al. The cause in question may be:

a2ala. Either a cause 'per accidens' (i.e. a cause producing that effect owing to some circumstance or determination accidental to that cause, as vrfien nian produces French speech owing to the accidental circumstance or determination that he is educated in French);

a2alb. Or a cause 'per se' (i.e. a cause INASMUCH AS IT IS SUCH or FROM ITS CM NATURE producing that~effect, as man produces speech).

a2a2. But:

a2a2a. If the cause happens to be a cause 'per accidens', then the conclusion that in ALL cases it will produce that effect, is an illegitimate conclusion.

a2a2h. If the cause happens to be a cause 'per se':

a2a2hl. then the conclusion is indeed true,

a2a2h2. but the argxomentation:

a2a2h2a. is only materially good,

a2a2h2h. and reaches a true conclusion only 'per accidens' (i.e. by fluke).

a2a3. Therefore some further consideration (besides the consideration that 'silver 1' and 'silver 2' and 'silver 3' etc, when heated to 960.5 degrees centigrade, is a cause of liquid, and the consideration that natural causes acts uniformly; or, in other words, some other interpretation of the constancy of the fact) is required, - and is had (because the mind is certain, at least subjectively, of its conclusion, whereas it could not be certain if these considerations or this interpretation alone were had).

a2b. Moreover:

a2bl. This contention of Lachelier would reduce induction:

a2bla. to this syllogism in the third figure (cf. n.307, A.a):

'a1 and a2 and a3 and a4 and a5 melt at 960.5 degrees centigrade.

But a1 ^d a2 and a5 and a4 and a5 are silver.

Therefore silver melts at 960.5 degrees centigrade.'

a2blb. 'fhich, since it is not legitimate unless 'a1 and a2 and a3 and a4 and a5' is a formally complete enumeration so that the predicate of the minor is 'ALL silvers', enabling the subject of the conclusion to be 'ALL silvers' (cf. n.307, B), - which is not so - needs to be completed by a hypothetic and conditional syllogism, whose major is taken from the principle of uniformity of natural causes, and whose minor is the legitimate conclusion ('SOME silvers, or silver in SOME cases, melts at 960.5 degrees centigrade') of the above syllogism, thus:

'If silver in some (sufficiently varied) cases melts at 960.5 degrees centigrade, then silver in ALL cases melts at 960.5 degrees centigrade.

But silver in some (sufficiently varied) cases melts at 960.5 degrees centigrade.

Therefore silver in ALL cases melts at 960.5 degrees centigrade.'

a2b2. But to what extent this argumentation is legitimate, it is not a syllogism, but is an induction disguised as a syllogism:

a2b2a. For to what extent this argumentation is legitimate, that conditional major is really this: 'If silver in some'sufficiently varied or enumerated cases melts at 960.5 degrees, then (since 'silver in EVTRY case^ or 'silver' can be substituted for 'silver in SOME sufficiently varied or enumerated cases or for 'SOIM sufficiently enumerated silvers'). ^Iver in EVERY case or SILVER melts at 960,5 degrees.'

a2b2b. But:

a2b2bl. WHENEVER THIS ASGEI'TSION BY SUBSTITUTION FROM SUBJECTIVE PARTS TO THE UNIVERSAL IS HAD, THM INDUCTION IS HAD; or, in other words, WHENEVER A MORE UNIVERSAL ( 'melts at 960.~5 degrees') IS PROVED OF A LESS UNIVERSAL ('silver') BY THE USE OF A STILL LESS UNIVERSAL ('some silver' or 'silver in some cases' or 'silver 1 and silver 2 and silver 3 etc'), THE PROCESS IS INDUCTIVE, not deductive or syllogistic.

a2b2b2. For in deduction or the syllogism a more universal (p) is proved by the medium of a less imiversal (M) of a still less universal (S), as explained above (n,272).

a2b5. But to what extent this argumentation is legitimate, some further, or other, interpretation of the constancy of the fact is required, and is made, by the mind, as said above (a2a3).

b. Hence others, such as BENTHEM, contend that the mind makes this passage from subjective pairs (in the major) to the \miversal (in the conclusion):

b1. by inferring from the constancy of the fact (in the major) the necessity, and therefore the universality. of the fact (in the conclusion).

b2. Now:

b2a. TO SAY THIS IS EXCELLENT,

b2b. BUT MORE THAN THIS MUST BE SAID; for the necessity is not evident save by recoirse to the i^rinciple of reason of be (or sufficient reason): 'of whatever is, there is a reason of be', and therefore 'of that constancy which exists, there is a reason of its existence'.

c. THEREFORE IT 1-JUST BE SAID:

c1. That:

c1a. From the constancy of the observed facts (in the major), the mind concludes to their necessity,' and accordingly their universality (in the conclusion);

c1b. but the reason of this constancy must be sought by the mind (it is found in the minor) in the very things themselves, that is, IN THE VERY NATURES (of 'a1', of 'a2', of 'aS' etc);

c1c. and thus the ultimate foundation of the certitude of induction is, ON THE PART OF THE OBJECT, the existence of NATURES, having determinate properties; which natures:

del. although in scientific induction,

clcla. they be not known in themselves.

clclb. but only in external signs,

clc2. nevertheless explain the constancy of the signs.

c2. And therefore it must be said that the mind reaches the universal (in the conclusion):

c2a. by substituting in the minor for the parts (a1, a2, a3, a4, a5) enumerated in the major the UNIVERSAL NATURE which IS IN those parts;

c2b. which substitution is possible and legitimate - given an observed constancy of the fact - because of the existence of that NATURE.

D. And thus not in one sole foundation, but in a TWOFOLD foundation, a. to wit:

a1. one on the part of the subject,

a2. another on the part of the object,

b. is the value of scientific induction based.

E. Wherefrom it follows that scientific laws enjoy true certitude:

a. whenever diligent scientific observation, or experiment, has established the constancy of the fact.

b. But:

b1. if this proof of the constancy of the fact is lacking,

b2. then certitude also will be lacking.

383. SCHEMATIC SYNOPSIS: The contents of the fore-going chapter upon the discovery of scientific laws may be thus schematically summarized:-

Through analysis of S and P: "because they are not about ontological or philosophical properties.

NOT

Through deduction, at least if it is question of more universal laws.

Universal scientific laws arise

Nor are they

Probable only, as Empiricists and Nominalists contend.

Only subjectively certain, as Subjectivists and Idealists contend.

I

through induction

subjectively, on the nature of our intellect

'PER SE' certain, their certitude being based

objectively, on the existence of Natures.

But they are objectively

'PER ACCIDENS' however probable only, by reason of their matter.

SECTION EIGHT,

EFFECT OF DEMONSTRATION OR SCIENCE IN GENERAL,

384. ORDER OF PROCEDURE: The effect of demonstration or of scientific or certain proof - which effect is called SCIENCE - will be dealt with:
- A. In two sections devoted to science, to wit:
    - a. On science in general: in the present section.
    - b. On sciences in special: in the ninth section.
  - B. But the treatise on science in general in the present section will deal:
    - a\* First, with the nature of science.
    - b. Secondly, with the origin of science.
    - c. Thirdly, with the division of sciences: and indeed:
      - 1<sup>st</sup> in the first place, with the division of science into speculative and practical science.
      - 2. in the second place, with the specification and division of speculative sciences.
      - d. Fourthly, with the subalternation of the sciences.
  - C. Hence the following order of this section:-

	Its nature	Chapter thirty-five.
	Its origin	Chapter thirty-six.
On science in general	On speculative and practical science,..	Chapter thirty-seven.
	Its division	On the specification and division of the <b>sciences.</b>
		Chapter thirty-eight.
	The subalternation of the sciences	Chapter thirty-nine.

After THIRTY-PrVE.

NATURE OF SCIENCE.

385. ORDER OF PROCEDURE: This chapter on the nature of science:

- A. V/ill:
- a. First, show that science is the formal effect of demonstration.  
Secondly, explain the nature of science or of this effect in general.
- 3. Hence the following order

On the  
nature of  
science;  
That it is the effect of demonstration. Article one.  
Its nature..... Article two.

ARTICLE ONE.

THAT SCIENCE IS THE FORMAL EFFECT OF DEMONSTRATION.

386. SCIENCE IS OBTAINED BY DEMONSTRATION: That science is obtained through demonstration or certain proof, follows from the very notion of science;, indicated briefly above and to be further evolved below.

- A. For science is certain knowledge through causes.
- B. But our mind, which begins from a most confused knowledge, can know causes of things:
  - a. neither in a first apprehension of things,
  - b. nor in immediate judgments.
- C. Therefore our mind can have certain knowledge of the causes of things only through demonstration or certain proof.

387. SCIENCE IS THE FORMAL EFFECT OF DEMONSTRATION: And therefore it must be said:

- A. That science is the effect of certain proof or demonstration.
- B. And indeed the formal effect thereof: because it is the very conclusion of certain proof or demonstration.



## ARTICLE WO.

## NATURE OF SdEWCE IN GENERAL.

388. CERTAIN KNaVLEDGE THROUGH CAUSES: SCIENCE, as all are aware, is CgCTAIH KNQYT.ETyiE THROUGH CAUSIS.

A. It is therefore explicative knowledge, necessarily true:

a. And therefore it is about~necessary objects only:

b. Wherefore there is no science of contingent objects.

®• Nevertheless it is, even though they be contingent^ about the things of the world, not indeed in their individuality (individual things are its material object), but abstract (Tts formal object).

a. For which reason, science is:

a1. directly and 'per se' (of its nature) about UNIVERSAL essences,

a2. indirectly only"!^!^ INDIVIDUALS, from which universal essences are abstracted (individual things having themselves as a term wherefrom).

b. This cannot be understood by those:

b1. who consider the universal as a certain construction of the mind, not having ontological value save through reference to individuals (which then have themselves as a term v^ereunto);

b2. or who endeavour to construct a science of the individxial, as does Chevalier;

b3. or who conceive all science after the manner of practical science, as does Blondel.

389. DIVERSE WAYS IN "ATHICH SCIHICES ATTAIN ESSENCES: But NOT IN THE SAME. WAY do all sciences attain essences:

A. Some:

a. are about essences, as known, ALTHOUGH NOT EXHAUSTIVELY NOR ADEQUATELY as they are in themselves:

a1. (if our intellect knew essences adequately or exhaustively or comprehensively, then there would be as many sciences as there are essences: for each essence adequately known would be a specifically distinct medium of demonstration whereby would be demonstrated the properties of that essence: cf. John of St Thomas, Cursus Phil. t.I, pp.8.9, 824).

a2, Sciences about essences as known are PHILOSOPHY and MATHEMATICS.

b. Yet diversely are they about essences:

b1. MATFTFMATICS is about accidental essences abstracted from sensible thing,

bla. (to wit, quantity and whatever 'per se' pertains to quantity),

bib. which are considered by the mathematician in themselves.

independently of their subjects, AS IP THEY "TERE SUBSTANCisS.

b2. But PHTTDSOPHY is about substances or substantial essences which, are known IN THEIR OI-ITOLOGICAL PROPERTIES. (Cf. n.S77, C).

c. Both philosophy and mathematics:

c1. are:

cla. deductive science (analytico-deductive),

clb. science V/HEREFORE (propter quid: cf. n.349), i.e. explicative science ('science d'explication'),

c2. whereby the CAUSES of essences become in themselves known to us.

B. But other sciences are also about essences, but as occult or hidden or undisclosed.

a. About essences indeed, because science is an intellectual knowledge which is necessarily about essences.

b. Yet as occult: For in these sciences:

- b1. essences do not become known to us save through constant, observable, external signs (or through empiriological lav/s established by induction),
- b2. which PRACTICALLY take the place, as the medium of demonstration, of the ESSENCES OR CAUSES iirflich remain unknown.
- c. These sciences are:
  - c1. experimental, inductive, sciences,
  - c2. sciences THAT (quia: cf. n.349, C), i.e. sciences of ascertainment or of statement ('sciences de constatation).
- d. These sciences,
  - d1. inasmuch as they are much less perfect than the others,
  - d2. necessarily tend towards a deductive form, viiich is more perfect (because the imperfect is of itself for the sake of the perfect),
  - d3. and by reason of that very tendency they seek to be subalternated to a deductive science:
    - d3a. whether to philosophy,
    - d3b. or to mathematics.

390. SCIENCE OBJECTIVELY AND SUBJECTIVELY CONSIDERED: But because every science has an object wherefrom it is specified, science can be considered in two ways, to wit:

- A. OBJECTIVELY: inasmuch as it is a complex or ordered multitude (a system) of scientific knowledges about some object:
  - a. Thus taken science is a logical artefact or construct, consisting in an ordering of concepts whereby definitions, divisions and argumentations are constituted: it exists:
    - a1. permanently in the mind as an ordering of species (types);
    - a2. and in writing (books) as in its sign.
  - b. It is under this acceptance that the moderns always consider science.
- B. SUBJECTIVELY: inasmuch as science is considered in the scientist:
  - a. Under this aspect science is a habit perfecting the intellect in relation to some scientific object (object of science).
  - b. This acceptance:
    - b1. though unknowm to the modems,
    - b2. is nevertheless THE MORE PRINCIPAL;
    - c. And the acquisition of this habit is the end of all study.

SCHBVIATIC SUMMARY.

391. SCHEMATIC SYNOPSIS: ?/hat has been said in the fore-going chapter on the nature of science in general, may be thus schematically summarized:-

—		either OBJECTIVELY, as it is in books.	
Y/hether it be considered		or SUBJECTIVELY, as it is a HABIT, in the scientist.	
Science	DIRECTLY about UNIVERSAL essences	either as known: and then	either accidental essences considered independently of their subjects: and then the science is MATHEMATICS.
			or substantial, known in their ontological properties: and then the science is PHILOSOPHY.
		or as occult, and known only in their observable si^ps (empiriological properties and lav/s): and then is had	POSITIVE SCIENCE.
is concerned			
INDIRECTLY about individual things, inasmuch as essences exist in individuals.			

## CHAPTER THIRTY-SIX.

## ORIGIN OF SCIENCES.

392. THE THEORY OF THE 'SOCIOLOGICAL' SCHOOL: According to this theory, propounded by DURKHEIM and his followers, who are called the 'Sociological' School:

A. The origin of sciences must be found in religion:

- a. from which little by little scientific notions were freed,
- b. so as to acquire autonomy.

B. Earlier indeed, GOLTZ had sustained the same opinion in his doctrine of the three ages of the human race: according to which:

a. Primitive men explained the phenomena of nature from the influence of the gods upon things;

a1. Thus they explained, for example, lightning from the anger of the gods, and the growth of crops from the benevolence of Gods beneath the earth, and the existence of fire from a gift of the gods, and the existence of man from creation by the gods, and so on.

a2. In this way the human race proceeded:

a2a. from fetishism (i.e. the worship of diverse material objects, such as a rock, or a block of metal, or a cat, in which they believed some powerful spirit to dwell, who could harm or help man),

a2b. through polytheism,

a2c. to monotheism.

a3. This period of the life of the human race Comte called the THEOLOGICAL stage.

b. As the gods were gradually more and more excluded from the explanation of nature, the more men came to explain natural phenomena through causes, immanent indeed to things, but metaphysical:

b1. Thus to the theological stage succeeded the METAPHYSICAL stage:

b2. In which explanations are made through occult and abstract causes (such as the 'immanent reason' of Heraclitus, the 'love hatred' of Empedocles, the participation in the 'ideas' of Plato, the soul, substantial and accidental 'forms', the 'forces' and 'operative powers' of Aristotle) and essences (such as the Schoolmen talked of), and abstractions which are conceived after the manner of realities.

b3. In this stage nature is explained 'a priori'.

c. At length, as science progresses, these metaphysical causes also are more and more expunged from the explanation of things:

c1. Thus arises the POSITIVE or SCIENTIFIC stage:

c2. in which:

c2a. instead of essence is introduced the concept of law;

c2b. instead of subjective and apriorist constructions is introduced the observation of facts and experiment;

c2c. instead of metaphysics is introduced modern positive science.

C. This explanation is neither conformed to REALITY nor proved by HISTORY.

a. True indeed it is that in recent times the positive sciences have made gigantic advances;

b. But it is not in the least legitimate to conclude:

b1. that these advances correspond to a transition from one stage to another:

b1a. as if metaphysics is an amelioration in human knowledge because theology is eliminated,

b1b. or as if positive sciences have advanced because metaphysics is eliminated.

b2. Nor that science issued forth from magic or theology.

393. **THE BIOLOGICAL THEORY:** According to this theory the sciences arise from the necessities of life.

A. This explanation is proposed by Bergson and many others.

3. This explanation obviously accords with Bergson's doctrine of intellect as a tool-making faculty.

C. Nevertheless that doctrine of the intellect cannot be admitted:

a. Since the intellect is:

a1. not only practical,

a2. but also speculative;

b. and indeed, even further, it is of itself:

b1. by priority speculative,

b2. and only "by posteriority practical.

D. Furthermore, this explanation:

a. even if it were able to explain the origin of the practical sciences:

b. yet cannot explain the origin of the speculative sciences.

394. **CONCLUSION:** Hence it must be said that:

A. The nature of the human intellect, whose PROPER formal object is being abstracted from sensible things, explains:

a. That ~~¥JNI~~ DISCOVERIES of science have their origin from the necessities of life, since all human knowledge takes its beginning from sense.

b. That ~~liANY~~ CAUSES, at the beginning unknown owing to the imperfection of the human intellect and considered to be supra-natural, have later been acknowledged to be really natural.

B. But it is likewise clear:

a. by reason of the ADEQUATE object of the human intellect, which is being:

a1. AS SCIENTIFICALLY KNOWABLE (SCIBLE).

a2. not as makeable.

b. that the true origin of science is found in the very nature of our intellect, which, as Aristotle rightly said, naturally desires to 'SCIENTISE'. that is, TO KNOW THROUGH CAUSES, or to know WHY or WHEREFORE.

## CHAPTER THIRTY-SEVEN.

### SPECULATIVE AND PRACTICAL SCIENCE.

395. **ORDER OF PROCEDURE:** This treatise of the division of science into speculative and practical science:

A. Will consider:

a. First. the division itself.

b. Secondly, the nature of practical science.

B. Hence the following order :-

On science Its division into speculative and practical science...Article one.

Nature of practical science...Article two.

## ARTICLE ONE.

## DIVISION OF SCIENCE INTO SPECULATIVE AND PRACTICAL SCIENCE.

396. **THIS DIVISION IS BY REASON OF END:** Science, by reason of its end, is divided into speculative science and practical science, - *waioh* division indeed is taken- not on the score of purposed end, but of natural end, *en.d.* it, is the act of every science, as said above, to know through causes.

Therefore the division of science into speculative science and practical science:

is not to be understood as if the act of the former only were to know, while the act of the latter were to operate (i.e. to do or make).

But of each the act is to KNOW.

But the end of this 'know' has itself diversely in each.

For the end of SPECULATIVE science is KNOWING ITSELF:

So that speculative science knows for the sake of knowing;

"For the speculative (scientist) speculates (i.e. looks at) the truth, not for the sake of something else, but FOR THE SAKE OF ITSELF only" (i.e. for the sake of speculating it only), (in *III de Anima*, lect.15., ed. Pirotta, n.820ss), or, in other words "has for end the truth which he is considering" (In Boethius de Trinitate, q.5, a.1).

But the knowing exercised by PRACTICAL science is a knowing ordered towards operation:

For "the practical (scientist) speculates the truth FOR THE SAKE OF OPERATION" (In *III de Anima*. *ibid*),

or, in other words, "orders the considered truth towards operation as towards end." (in Boethius de Trinitate, *ibid*.).

397. **THIS END IS THE END OF THE KNOWLEDGE OR SCIENCE:** But note that the end whereof it is question here, and which specifies the two sciences:

A. Is:

- a. the end of the KNOWING ITSELF or of the VERY SCIENCE ITSELF.
- b. not the end of the operant or scientist.

B. For if the distinction were taken on the part of the operant, rightly would this distinction be rejected, as Baudin wishes to reject it. (introd. *Generale a la Philosophie*, p.125).

C. Therefore, against Baudin, this division is to be retained as objectively based. (Cf. Yves Simon: *Critique de la Connaissance pratique*, ch.I).

## ARTICLE TWO.

## NATURE OF PRACTICAL SCIENCE.

398. **PRACTICAL SCIENCE KNOWS:** "Although it is on account of operation, nevertheless that operation is not an act of science, but an act of virtue." (in Boethius de Trinitate, *ibid*. ad 3); v.g. although moral philosophy is ordered towards speaking truthfully and paying debts and worshipping God etc, nevertheless speaking truthfully and paying debts and worshipping God are not acts of moral philosophy, but of the virtues of veracity and of Justice and of religion.

A. The reason is that:

- a. the act of practical science is some knowing (through causes),
- b. whereas operation is some doing, (or making).

B. For in this:

a. For example, does moral philosophy (ethics) differ from prudence:  
 a1. that the act of moral philosophy is KNOWING an operation (doing),  
 a2. whereas the act of prudence is DIRECTING an operation,  
 h. and, for example, does the philosophy of art (poietics) differ from art:  
 b1. that the act of the philosophy of art is KNOWING an operation (making),  
 b2. whereas the act of art is DIRECTING an operation.

399. FORMAL OBJECT CP PRACTICAL SCIENCE: Nevertheless it is not sufficient in order that a science be practical, that it be about an operable (i.e. about an act or a product).

A. For a science may be about an operable as a material object (of science), which it considers speculatively:  
 a. then the formal object is speculative, and therefore this science is speculative, not practical.  
 b. Thus:  
 b1. For example, may natural philosophy consider buildings;  
 bla. but considering them:  
 bla1. not as makeable,  
 bla2. but as sensible beings;  
 bib. and then buildings:  
 bib1. will be a material object:  
 bib1a. both of natural philosophy, which considers them speculatively,  
 bib1b. and of the philosophy of art, which considers them as makeable, or practically;  
 "b1c. the formal object being diverse for each science.  
 b2. For example, "if a builder considers house:  
 b2a. "defining Taouse and dividing house and considering its universal predicates.  
 b2b. "For this is to consider operables:  
 b2b1. "in a speculative manner,  
 b2b2. "and not according as they are operable." (I, q.14, a.16).

B. These last words of St Thomas indicate what is the formal object of practical science:  
 a. to wit: "operables according as they are operable".  
 b. For otherwise practical science would not be "FOR THE SAKE OF OPERATION" (in III de Anima, ut supra n.396 A.c).

400. DIVISION OF PRACTICAL SCIENCE INTO SPECULATIVO-PRACTICAL AND PRACTICO-PRACTICAL SCIENCE: But operables, "according as they are operable", can be considered by the practical intellect in two ways; to wit, according as they are "proximate to or remote from operation" (^In Boethium de Trinitate q.5, a.1, ad 4), i.e. proximate to being done or made, or remote from being done or made.

A. A science which considers operables, according as they are remote from operation, is said to be speculativo-practical science: such are, for example, moral philosophy, philosophy of art, theoretical medicine or the theory of architecture.

B. A science however which considers operables, according as they are proximate to operation, is called practico-practical science: such are, for example, the practical moral sciences (to wit, jurisprudence, casuistry, sociology etc), practical medicine or practical architecture.

C. It is to be observed that both speculativo-practical science and practico-practical science are about a UNIVERSAL object: for otherwise they would not be science.

D. It is to be noted accordingly, furthermore:  
 a. that this division of science by the differences 'speculativo-practical' and 'practico-practical' is a division of science;  
 b. and is not to be confused with the division of practical judgment by the differences 'speculativo-practical' and 'practico-practical': for:  
 b1. speculativo-practical judgments proceed from science,  
 b2. Whereas practico-practical judgments proceed from prudence or art.  
 c. Hence the following division proposed schematically:-

"Either as remote from  
operation: and then the  
Judgment is a  
SEBCULATIVO-practioal  
Judgment, and proceeds  
from SPEGULATIVO-PRAGTICAL

either about it considered  
UNIVERSALLY; and then it  
is a SEECULATIVO-PRACTICAL  
JUIXatEMP and is a Judgment  
of SCIENCE; and then it is  
about an operable

....SCIENCE

JIEKMOT  
about an  
operable  
as  
operable  
may be

or as proximate to  
operation: and then the  
Judgment is a  
speculativo-FRACTICAL  
Judgment, and proceeds  
from PRACTICO-PRACTICAL

either as a DOING:  
and then it is a  
Judgment of, and  
proceeds **from**.... .PRUDMGB.

or about it considered  
SINGULARLY: and then  
it is a EMCTICO-  
PRACTIGAL JUDGtINT;  
and then it is about  
an operable

or as a MAKING:  
and then it is a  
Judgment of, and  
proceeds **from**... ART.

E. Accordingly both speculative-practical science and practico-practical science "is contained under practical (science), being ORDERED TOWARDS OPEEIATION"~ (In Boethium de Trinitate, q.5, a.1, ad 4).

P. But if:

- a. The QUESTION is asked: whether these sciences:
  - a1. differ specifically, and so are specifically distinct habits,
  - a2. or are only parts of the same science?

b. The ANSWER seems to be that:

b1. They are not specifically distinct, and so are not diverse habits, IF IT IS QUESTION OF SCIENCES, such as medicine, which are of the order of POSITIVE sciences. Thus does St Thomas speak of the parts of medicine in Boethium de Trinitate, q.5, a.1, ad 4), in which would be distinguished as parts of the same science:

- bla. its theoretical or speculative (speculative-practical) part,
- bib. and its practical (practico-practical) part.

b2. BUT IF IT IS QUESTION OF MORAL PHILOSOPHY AND MORAL SCIENCE, it is probable that they are two habits specifically distinct, because beneath the genus of practical science, a diverse manner of defining seems to indicate specific diversity. For not in the same way do practico-practical moral science and speculative-practical moral science (i.e. moral philosophy) define, or resolve their concepts (cf. n.377, C).

b2a. SPECULATIVO-PRAGTICAL moral science (viz. moral philosophy) defines relatively to BEING (i.e. ontologically),

b2a1. Just as do the speculative philosophical sciences;

b2a2. yet it is not a speculative science, because it already proceeds in a composite manner (i.e. "by the application of a form to a matter" to wit, by the application of the principles of moral rectitude to acts - "and not by the resolution of a compound into its universal formal principles": I, q.14, a.16) and proceeds towards moving, albeit remotely, into operation. (Vherefore here John of St Thomas and Gredt seem to speak less correctly).

b2b. But PRACTICO-PRACTICAL moral science (viz. moral science, v.g. casuistry, Jurisprudence, sociology) :

b2'bl. because **it** must move proximately to operation,

b2b2. defines:

b2b2a. not relatively to being,

b2b2b. but relatively to COITOBETE NECESSITIES, (while, as is elsewhere explained, empiriological science defines relatively to observed phenomena or sensations or operations of measurement).

b2c. Therefore:

b2cl. between the two manners of proceeding, to wit:

b2cla. that of speculativo-practical moral science (moral philosophy),

b2clb. and that of practico-practical moral science (moral science).

b2c2. there seems to be the same distinction as between:

b2c2a. the ontological manner of defining proper to speculative philosophy,

"bScSb. and the empiriological manner of defining proper to positive science. (Cf, Maritain: *tes degres du savoir*, pp.880ss; Yves Simon: *La critique de la connaissance morale*, ch.VI-VII).

b3. BUT AS RBG-ABDS MORAL THEOLOGY **it** is to be said, on the contrary, that speculativo-practical moral theology and practico-practical moral theology are not diverse habits:

b3a. since there is less difference between these two than between dogmatic theology and moral theology:

b3b. which, as is proved in sacred theology, are the same habit, which is together:

b3bl. speculative,

b3b2. and practical.

#### SCHMATIO SUMMARY.

401. SYNOPTIC RECAPITULATION; The contents of the fore-going chapter may be thus schematically summarized:-



SPECULATIVE science; which is a certain		through causes
'OR THE SAKE OF KNOWING.		
		Not as end of operant or scientist
Its end, to wit, operation is taken		but as end of the knowledge itself.
Sciences are divided on the score of end into	Its NATURE	Not according as this is considered in its universal. predicates: (the science then would be speculative).
	It is therefore about an OPERABLE (which is its material	But according as it is operable this is its formal object.
PRACTICAL science or KNOWING through causes FOR THE SAKE OF OPERATION;	May he considered as	Remote from operation: the science is then SPECULATIVE~ PRACTICAL.
		Proximate to operation: the science is then PRACTICO~ PRACTICAL:
Its DIVISION: an operable		
If it is question of positive sciences (v.g. medicine): for then both the speculative-practical science and the practico- practical science is about observables.		
Is not specific		
If it is question of sacred theology: because both speculative- practical and practico- practical moral theology proceed under the same formal light (or formal character wherever), to wit: virtual revelation.		
This division		
But is specific if it is ques- tion of moral philosophy and moral science, inasmuch as		Moral philosophy resolves its concepts relatively to being.  But moral science resolves its concepts relatively to concrete (ob- servable) neces- sities.

CHAPTER THIRTY-EIGHT.

SPECIFICATION AND DIVISION OP SPECULATIVE SCIENCES.

402. ORDER OP PROCEDURE: This treatment of the specification and division of the speculative sciences:

A. Will deal:

^first, with the specification of the speculative sciences: which treatment will be twofold. to wit:

al. In the first place, shewing that these sciences are specified from their formal object;

a2. In the second place, exposing the diverse degrees of abstraction according to vdiich are taken the diverse formal characters whereunder of these sciences.

b. Secondly, with the division of the speculative sciences: -which treatment will likev/ise be twofold, to wj.t:

bl. In the first place, exposing their true division;

t>2. In the second place^ exposing the divisions proposed by modern authors.

B. Hence the following order :-

On the specification and division of the speculative sciences:	On their specification	Prom formal <b>object...Article</b> one.
		The diverse degrees of abstraction...Article two.
	On their division	As it is truly <b>proposed.Article</b> three.
		As it is proposed by <b>moderns.Article</b> four.

ARTICLE ONE.

SPECUUTIVE SCIENGES ARE SPECIFIED FROM THEIR FORMAL OBJECT.

403. TViTOFOLD FORMAL CHARACTER OF OB.TECT: "Note that the formal character ratio formal!s) of the object in science is twofold: the one of the object AS THING, the other of the object AS OBJECT; or the one as WHICH the other as WHEREUNDER.

A. "The formal character of the object, as THING, or WHICH, is THE CHARACTER OF THE OBJECTED THING WHICH PRULARILY TERMINATES THE ACT OP THAT HABIT, and from which flow the passions of that subject, and which is the medium in a first demonstration: as:

- a. "entity in metaphysics,
- b. "quantity in mathematics,
- c. "and mobility in natural (scimee).

B. "But the formal character of the object as QBJEgT. or YWTEREUNDER. is SUCH UMATIRIALITY. OR SUCH A MODE CF ABSTRACTING A'ID OF TTFHTTJT-MT,• for example: ~ ~ ~

- a. "without any matter whatsoever, in METAPHYSICS.
  - b. "with intelligible matter only in MATHEMATTCR.
  - c. "and with sensible matter, yet not this, in NATURAL (SCIENCE)."
- (Cajetan; In I, q.1, a.3, n.III). “

AHA NTCESSITT yti^T.TrPY awTi T^TSTINCTIOTJ OF THESE WO CHARACT^;

from raiitli^^tion of two genera, in which the object of a science located.

A. "For:

a. "it must formally be:

- a1. "such a THING,
- a2. "suchwise SCIENTIFICALLY KNOW^j^ (scibilis).

b. "And therefore:

SL.""LtirI fomal character constituting it formally in such be-real"

character constituting it formally in such be-knowable" (i.e. in such scientific knowability),

b2. "in order that it may be placejd:

- b2a. "both in the genus of things^ ^ vieac ' (ra^(=^^an' ibid.
- b2b. "and in the genus of scientifically hnowabj^o. \—j ]—●

n.IV).

B. In order that this argument may be more easily understood, let us illustrate it by the aid of ex.-onples:

a. JUST AS, in order that something may be the object of a SENSE (v.g. of sightT:

Sa ^Lch^a TOT^Ito^wit, a COLOim\_THING), trTQ-raTTi'^  
alb! >:^nohwise SENSIBLE (to wit, SEEABLY SENSIBLE, i.e. VI^IE).

a2. and therefore:

Sai.“otra ^ I character (to wit. OOLOffi) constituting it formally

in Bansihility (to wit, in SjEABIB SMSISILm. i.a. in YloIsnJTY),

te‘g^^of’^t!^1nto \*ioh it ^

order to be the object of SIGHTTto wit, in the genus SEEABLY SMSIBI^ ,  
i.e. 'VISIBLE')-

b. SO TOO, in order that something may be the object of a SCIIgO.  
(v.g. of geometry):

b1. It must formally be:

Mb! ^u^srCTmSiiLMffirs’iat, aEamMCALLI KNOTgja:-

b2. And therefore:

blal.^bot^a formal character (to wit, SHAH) constituting it formally

∴H:¥S;=SS-i;;

b2b. in order that it may be placed.

b2bl. both in the genus of thi^s into which it )  
order to be the object of (to wit, in the genus\_ )»

b2b2. and in the genus of scientifically knowables into ^ich it must  
be bright in order to be the c5bject of GEOMETRY (to wit, in the genus  
CTniiifETRIGALLY KNOWABLE\*) .

c. AND SO TOO for the object of every science.

405. DISTINCTIONS OF OBJECT: Accordingly, the thii^ which is the object of  
a science may be considered in two ways,, to wit:

A. According as it is some thing in itself absolutely (i.e. as a thing, not as an object) :  
a. Then it is taken according to the reality or entity which it bespeaks in itself absolutely.  
b. Thus taken it is the MATERIAL OBJECT of the science.  
c. ^/iTherefore the MATERIAL OBJECT is defi.ned: TOATEVER BY THE SCIENCE IS KNOWN. TAEEN ACCORDING TO THE REALITY Yi/HICH IT BESPEAKS IN ITSELF ^SOLUTELY.

B. According as it terminates the act of the science (i.e. as an object):  
a. Then it is taken according to the formal character of the object:  
b. But this formal character of the object is twofold. to vdt:  
bl. The formal character constituting the object SUCH A THIEG- as is known by the science or terminates the act of the science: and then:  
bla. This formal character taken as a form is the FOEIMAL CHARACTER OR REASON OF TEIE OBJECT AS IT IS A THPJG or the FORMAL CHARACTER 'YjITHICH\* is known, and is defined; THE CHARACTER OF THE OBJECTED THING \WHICH.ERIMARILY AND 'PER SE« (NECESSARILY) TERMINATES THE ACT OF THE SCIMCE.  
bib. But if the compound of this formal character with its subject (i.e. with the material object) is considered, then is had the FORI'IAL OBJECT 'Y/HICH\* is known; and this is defined: THAT liVHICH BRIIJARILY AND \*EER SE\* (NECESSARILY) TERMINATES AS A THINS THE'ACT OF THE SCIENCE.  
b2. The formal character or reason constituting the object IN SUCH MANNER KNO'YABLE by the science or terminative of the act of the science: and this is the FORMAL CHY^iCTER OR REASON OF THE OBJECT IT IS AN CBJECT or FORIviAL CHARACTER CE REASON WHEREUNDER;  
b2a. and:  
b2al. it is defined: THE FORiFal CHARACTER OR REASON WHEREUNDER pS OBJECT IS IN SUCH lvtANNER KNaVABLE BY THE SCIENCE:  
b2a2. and it consists in SUCH IMMATERIALITY OR SUCH A MANNER OP ABSTRAACTINC AND OF DEFINING;  
b2b. and it is called also, especially by more recent scholastic writers the FORMAL OBJECT YHEREBY OR WHEREUNDER.

C. Which distinctions:  
a. May be thus exhibited schematically:-

		AS IT IS THE OBJECT, i.e. AS IT IS KNQYABLE BY THE SCIENCE: ani thsn is had the FORMAL CH.riRACTER OR REASON YifHEREUNDER. OR FORMAL OBJECT Y/HEREUND'eR OR <b>WHEREBY</b> .	
	either the FORMAL REASON Ce CHIjLiCTER OP raE OBJECT		
The object of a science may be taken according to:		AS IT IS A THING: and then is had the FORMAL CHARACTER OR REASON V/HICH is known,.....	Prom which results the OBJECT simply speaking.
			From which resu3.ts the FORMAL OB-JECT WHICH
	or its entity considered in itself absolutely: and then is had the MATERIij. <b>OBJECT..</b>		

b. Just as the object of sight may be thus exhibited:-

	AS OBJECT; FORMAL CHARACTER OR REASON 'THEREUNDER; <b>light.</b>	
FORMAL REASON OR <b>character"</b> OF ITS OBJECT		OBJECT SIMPLY speaking: illuminated coloured extense.
	AS THING; FORMAL CHARACTER OR REASON WHICH; <b>colour-...'</b>	
Object of <b>si<sup>j</sup>^t;</b>	FORMAL OBJECT WHICH; coloured extense. —	

ITS MATERIAL OBJECT: opaque extense<sup>j</sup>

- c. Which is thus illustrated:  
c1. from the object of the science of geometry:

	AS OBJECT : FORMAL CHARACTER OR REASON y/HEREUNDER: The geometrical manner of <b>abstractness and definition</b>	
FORMAL REASON OR CHARACTER OF ITS (EJECT		OBJEOT simply speaking: Body as shaped taken under the geometrical manner of abstracting and defining.
	AS THING; FORMAL CHARACTER OR REASON YHilCH: Shape.	
Object of geometry	FORMAL OBJEOT Y/HICH; Shaped body, or body as shaped....	
	ITS MATERIAL OBJECT ; Body	

- c2. from the object of the science of metaphysics:

	AS OBJECT: FORMAL CHARACTER OR REASON Y/HEREUNDER: The metaphysical mode of <b>abstractness and definition..</b>	
FORMAL REASON OR CHARACTER OP_ITS OBJECT		OBJECT simply speaking: Being forasmuch as <b>it</b> is being, taken under the metaphysical manner of abstracting and defining.
	AS THING: FORMAL CHARACTER OR REASON YfliiCH-Beir.:-	
Object of metaphysics	FORMAL OBJECT YraiCH: Being forasmuch as <b>it is being..</b>	
	ITS MATERIAL OBJECT ; Being,	

406. THE SPECIFICATIVE PRINCIPLE IS THE FORMAL REASON WHEREUHDR; But that  
speculative sciences are specified from the very formal reason or  
character Y/HEREUNDER, is manifest:

A. For "that division of being solely diversifies speculative habits, which infers a proper division of THE SPECULABi-iE AS IT IS SPECUi-^ABi-iE, through proper differences of tke speculable itself: which are taken according to diversity of manner of ABSTRACTING FROM MATTER ———

B. "And if you add to what has been said that the differences of the SCIENTIFICALLY KNOWABLE AS SUCH are the very FORMAL REASONS OF THE SCIENTIFICALr.Y KNOWABLE OBJECT AS IT IS AN OBJECT:

C. "it follows of necessity:

a. "that the specific unity and diversity of the sciences is accounted through the unity and diversity OF THE FORMAL REASON OF THE OBJECTS AS THEY ARE OBJECTS:

b^ "or, which is the same, of the formal reasons V/HEREUNDER things are known scientifically." (Cajetan: ibid. n.V).

## ARTICLE TWO.

### THE DIVERSE DEGREES OF ABSTRACTION

407. PREAMBLES: Here:

A. It is question of the diverse degrees of abstraction according to which are taken the DIVERSE REASONS WHEREUNDER of the speculative sciences.

B. Note that abstraction is taken here:

a. not for the act of the mind abstracting,  
b. but for the term of that act, which is the state of the object abstracted, (I.e. abstractedness).

C. For a good understanding of the formal reasons or characters WHEREUNDER of the sciences, which specify and diversify the sciences, it is necessary rightly to understand:

a. both the two genera of abstraction (n. 4i08),  
b. and the diversity of the degrees of abstraction (n. 409).

408. THE TV/O GENERA OF ABSTRACTION: Regarding this it is to be known that:

A. "ABSTRACTION by intellect is TWOFOLD, to wit, that whereby a FORMAL is abstracted from a material, and that whereby a UNIVERSAL WHOijE is abstracted from its subjective parts."

a. Now:

a1. "according to the first, quantity is abstracted from sensible matter;

a2, "according to the second, animal is abstracted from ox and lion.'

b. But:

b1. moreover:

bla. "the first I call FORMAL (intensive) abstraction,

bib. "but the second I call TOTAL (extensive) abstraction;

b2. "because:

b2a. "what is abstracted by the first abstraction, is as a FORM OF that wherefrom it is abstracted; but what is abstracted by the second abstract' re is as a universal WHOLE with respect to that wherefrom it is abstracter.

B. "But:

THESE TV70 ABSTRACTIONS DIFFER IN TOUR WAYS;

a, "FIRST,,  
oi. "BECAUSE;

ala. "In FORMAL aBstraotion each concept separately is had complete, to wit, the ocnoept of that which is abstracted, and of that whereftx)ni it is abstracted, that is. the formal concept and the matoria.! concept: so that neither concept includes the other.  
alal» "For a line, in that which a line is, has completely its definition not including sensible matter.  
alaS. "But conversely sensible matter has completely its definition not including anything of a line, in that which a line is; otherwise natural definitions would abstract from sensible matter.

alb. "But in TOTAL aDstracyion, each concept separat^y does not remain complete, so that the one doeu not include the other; but one only; to wit, the concept of that Mihich is abstracted" (does not include the other).  
"For vdien I abstract animal from man, the concept of man and the concept of animal do not prescind from each other; but only the con¬cept of animal dees not include the concept of man: for man is not understandable without animal.

a2. "The foundation of thii<sup>3</sup> difference is, th^:

".....The former (to wit. formal)abstraction;  
g^al. "is not wrought tharou^ the consideration of something which is of the notion of that matter and throu^ the non-consid¬eration of something, which is of its notion:  
a2a2. "but rather it is wrou^it throu^ the separation of those things which are of the notion of the formal from those which are of the notion of the material, as the example givm shows.

a2b, "The latter (to wit, total) abstraction is wrought through the consideration of something which is of the notion of the inferior; and through remotion, that is, non¬consideration of something which^is of the notion of that same inferior; for animal is abstracted from sonan through this, that the intellect considers in man the \*animal\* and not the \*rational\*, whereof both are of the notion of man.

•h. "SECONDLY THE! DIJJ'Feti BECAUSE:

b1. "Throufda FORMAL abstraction arises in that which is abstracted:  
bla. "actuality,  
bib. "distinctness,  
bio. "and intelligibility.

b2, "But in TOTAL abstraction arises in that vMoh is abstracted:  
•hpa. "rotmtiality.  
b2b. "eSnfusion,  
l^9,rt^ less

« "THIRDLY THEY DIFFER:

al. "BECAUSE:

cla. "In FORMAL abstraction, so far forth as something is more flbstnant^ SO much more known is it IN ITS NATURE.

nib. "But in TOTAL abstraction so far forth as something is more nba+T'antf so much more known is it TO US.

"The foundation of these differences is because:

c2a. "Formal abstraction is wrought through separation P<sup>ss</sup>ntial materials and the like.

c2b. "But total abstraction is wrought through separation from actual specifics, and by how much something is the more abstracted from these, by so much is it the more potential, since genus by can-ness contains its inferiors: and so much the more is it less intelligible, since act according to itself is more known than potency.

UNIVERSAL than others, and can be compared to others as to subjective parts, for the reason that both abstractions can befit the same:

d2b2. "nevertheless inasmuch as they stand under metaphysical:

d2b2a, "they are not universals with respect to naturals

d2b2b:'but:

d2b2bl. "forms,

**K2**. "and Naturals are their matter." (Cajetan: Prooemium in De Ente et Essentia: Conclusio.)

409. THREE DEGREES OF FORMAL ABSTRACTION: It is to be observed that the three degrees of formal abstraction are ANALOGOUS, just as being itself is analogous, that is essentially diverse. (Cf. nn. 148 - 159).

A. This diversity is already evident in the very enumeration which St. Thomas gives of these degrees (In Boethium De Trinitate, q,5,a.1)  
a! "li'or certain of the speculables there are which depend on matter according to be, because only in matter can they be. And these are distinguished;



al. "Because certain (of them) depend on matter both according to be and according to understanding, as do those IN WHOSE DEFINITION IS PUT SENSIBLE MATTER.

ala. "wherefore they cannot be understood without sensible matter, as flesh and bones must be taken in the definition of man;

alb. "and of these is PHYSICAL or NATURAL SCIENCE.

- a2. "But;  
 a2a. "certain (of them);  
 a2a1. "although they depend on matter according to  
 a2a2. "nevertheless not according to understanding, because IN Itm.4^..  
 nWTMTTTON?^ fej WOT PT7P 3M3IHLE ILASTSR; as line and number;  
 a2b. "ard of these is MATHUIA-TICg.

"But there are certain epeoulahlee which Bn W0i; BEPgID ON MATOS  
 tCCOBDIIIIG TO BE;  
 b1. "because without matter they can be;  
 bla. "whether it be that they are never in matter, as God and angel,  
 bib. "or that in certain (cases) they are in matter, and  
 (cases) not, as substance, quality and act, one and many and such things;  
 -^."^about all of whidi is theology, that is, divine science, because  
 the chief of the objects known in it is God. By another name it is called  
 iEPAPHYSICS. that is transphysics.  
 b2a. "because after physics it occurs to be learnt by us  
 b2b. "to whom it befits to come to insensible things from sensible  
 things." (In Boethium de Trinitato, q.5, a.1).

### 3. But this diversity is still more evident from this, that;

a. In the FIRST degree of abstraction "in which is absolutely consid^ed  
 some nature according to its essential charac^t^' (abstracted) rom^^\*  
 parts, which are not parts of the species, but are accidental parts.

b. But in the SECOND degree a form is abstracted from mat^^.

b1. However:  
 bla. Not indeed a substantial form, "because a substantial form and th  
 matter corresonding to it depend on each other, so that one c^not be under-  
 stood without\*the other, for this reason that a proper act is in its proper  
 "^^\*°bib. "but it is understood of an accidental forrii, lAiiich is quantity ^d  
 figure, from which indeed sensible matter cannot be abstracted tthrough under-

blb1. "since sensible qualities cannot be understood unless quantity bo  
 pre-understood, as is clear in surface and colour:  
 blb2. "neither also can a subject of movement be understood, v^ich is not  
 understood as quantic." (in Boethixmi De Trinitate, q.5, a.3).

b2. Nevertheless "since all accidents are compared to substance as forra  
 to matter, and the character of every accident whatsoever depends on substance,  
 it is impossible that such a form be separated from substance.

b2at "But accidents come to substance in a certain order. For:  
 b2a1. "first comes to it quantity,  
 b2a2. "next quality,  
 b2a3. "then passions and movement.  
 b2b. "iTherefore quantity can be understood in substance, before th  
 understood in it sensible qualities wherefrom it is called sensible mcxtter:  
 b2b1. "and thus according to the notion of its substance:  
 b2bla. "cuantity does not depend on sensible matter,  
 b2blb. "but on intelligible (matter) only.  
 b2b2. "For substance, accidents once removed, remains comprehensio e  
 only by intellect." (ibid.).

c. But it is cle^r that the THIRD degree of abstraction differs from  
 the other two, from this, that it considers being abstracted from all mat\_tgr.  
 c1. both intelligible,  
 c2. and sensible.

G. But the same is again evident from this, that in each degree 'the  
 term of knowledge is not always uniformly: for sometimes it is in sense.,  
 sometimes in imagination, sometimes in intellect alone.

a. "For sometimes tlie properties and accidents of a thing which are  
 manifested by sense, sufficiently express the nature of the thi^\_j  
 al. "and then it behoves that the judgment about the true thing, which  
 the intellect makes, be conformed to those things vdiich sense manifests about  
 the thing.

a2. "and such are all natural things, which are determined to sensible matter:

a2a. "and TEEKBPORE IN NATURAL SCIENCE KNaTLEDGE MUST BE TERMINATED AT SENSE, to wit, that we judge about things in this way according as sense manifests **them**.

a2b. "And these are NATURALS (HfYSICS) which are concreted with sensible matter and movement:

a2b1. "both according to be,

a2b2. "and according to consideration.

b. "But there are certain things the judgment of vAiich does not depend on those things which are perceived by sense; because, although according to be they are in sensible matter, nevertheless according to character as defined they are abstracted from sensible matter.

b1. "But the best judgment about each thing is made according to character as defined.

b2. "But:

b2a. "because:

b2a1. "according to character as defined they do not abstract from all matter TBiiatsoever. but only from sensible matter;

b2a2. "and, sensible conditions being removed, there still remains something imaginable;

b2b. "therefore IN SUCH THMGS IT BEHOVES THAT JUDGIIENT BE TAKM ACCORDII^ TO THAT miCE IMAGINATION IIANIFESTS.

b3. "Such are MATHEMATICS.

b4. "For in mathematics knowledge must according to judgment be terminated at imagination, not at sense, because mathematical judgment surpasses the apprehension of sense:

b4a. "wherefore there is not the same judgment sometimes on a mathematical line as on a sensible line;

b4b. "as in this, that a straight line touches a sphere only according to a point: which befits a separate straight line, but not a straight line in matter.

c. "But there are certain things which EXCEfclIJ both that which falls under sense, and that vdiich falls under imagination; as those things vAiich do not depend on matter, - neither according to be nor according to consideration: and therefore the knowledge of such according to judgment ou^t not be terminated at imgination nor at sense.

c1. "But nevertheless from those things Tidiich are comprehended by sense or imagination we come to the knowledge of these:

cla. "either by way of causality; as when from an effect we know the cause, which is not commensurate to the effect, but excelling (it);

clb. "or by excess;

clc. "or by remotion, when we separate from such things all that sense or imagination apprehends.

c2. "Therefore:

c2a. "in divine science we can lose sense and imagination:

c2a1. "as principles of our consideration,

c2a2. "but not~as 'terms; to v/it, that we should judge divine things to be such, as are those things which sense and imagination apprehend.

c2b. "But to be led to something is, to be terminated at it;

d. "And:

d1. "therefore:

d1a. "IN DIVINE SCIENCE" (i.e. METAPHYSICS) "WE OUFFIT TO BE LED NEITHER TO SENSE NOR TO DIAGINATION;

d1b. "BUT IN IAATHEMATfcs TO IMAGINATION and not to sense;

d1c. "BUT IN NATURAL (SCIENCE) TO SMSE.

d2. "And on account of this, they offend, who endeavour to proceed uniformly in the three departments of speculative science. (In Boethium de Trinitate, q.6, a.2).

410. SCHaiATIC SUMMARY: The contents of the fore-going article may be thus synoptically recapitulated:-

NOT as it Is a THING.(i.e. not farom formal reason which).

		MORE POTENTIAL.	
		For by this abstraction is got an object:	
Speculative sciences are specified from the FORMAL REASON OF THEIR OBJECT;			[AND LESS KNCWTN.
	Not according to degrees of total abstraction:	And this abstraction is common to every science.	
	BUT as it is axi OBJECT, i.e. as it is a SCIENT~IFIC MOff-~	—	MORE ACTUAL
	ABLE: and so from the formal reason ^THEREUNDER:	For by this abstraction is got an object	AND MORE KNOWN.
	This is taken —		sensible: Then is had the FIRST DEGREE, with matter
	But accor- ding to the diverse degrees of formal abstraction	From modes of de~	intelligible: Then is had the SECOND DEGREE.
		The diverse fining degrees of this abs~ traction are analo- gous, and therefore ESSENTIALLY diverse,	without matter: Then is had the THIRD DEGREE.
			either SE^BE; Then is had the FIRST DEGREE.
		From the terms of know~ ledge	or BIAGINATION: Then is had the SECOND DEGREE.
			or INTELLECT: Then is had the THIRD DEGREE.

ARTICLE THREE.

THE DIVERSE SPECULATIVE SCIENCES.

411. THREE GENERA OF SCIENCES: Prom what has been said above, both about formal reasons T?HEREUNDER, and about the degrees of abstraction:
- A. It is clear that there are three GENERA of sciences:
  - B. Whereof:
    - a. The ^rst is the genus of sciences in the first degree of formal abstraction (n.412);
    - b. The second is the genus of sciences in the second degree of formal abstraction (n.4i3);
    - c. The third is in the third degree of formal abstraction (n.414).

412. SCIENCES IN THE FIRST DEGREE CF ABSTRACTION: In the first degree of formal abstraction are had, not only that part of philosophy vdiidh is called NATURAL PHILOSOPHY (or PHILOSOPHY CF NATURE), but also the POSITIVE SCIENCES (or SCIENC^^NATURE).

A. For these positive sciences which, as said above (n.589, B). are about essences known only in their empirical signs:

- a. belong to the first degree of abstraction,
- b. since the other degrees of abstraction are abstractions from sensible matter, about which the positive sciences are concerned.

B. These positive sciences are specifically diverse from natural philosophy, although both are about sensible being.

a. For NATURAL PHILOSOPHY knows essences in themselves, at least through their philosophical properties (cf. n.377, C):

- al. and it is more about movable being, although;
  - ala. it is essentially distinguished from metaphysics,
  - alb. and is naturally subordinated to it.
- a2. And therefore the judgment of natural philosophy is terminated at sensible being.

b. But the MATHEMATICAL SCIENCES are about essences as occult which they know only in external signs (cf. n.377, C):

- b1. and they are more about sensible being or about the observable,
- b2. and naturally tend to resolve their judgments in the order of phenomena (of observables).

c. Therefore, although natural philosophy and the sciences of nature belong to the same degree of abstraction- as regards elongation from matter, nevertheless as regards approach to immateriality they are not in the same case:

c1. For natural philosophy:

- cla. (although it is in the same degree of immateriality as the natural sciences: for both are about movable being),
- clb. attains movable being through a certain participation to metaphysical being and in a more intelligible manner, since it is;
  - clb1. rather about movable being,
  - clb2. than about movable being.

c2. But the natural sciences:

- c2a. have no concern beyond the order of sensible observation,
- c2b. and therefore;
  - c2b1. they attain the same material object indeed as natural philosophy (i.e. movable or sensible being),
  - c2b2. but they attain it through a certain participation to the knowledge of the senses and in a more sensible manner, since they are;
    - c2b2a. more about movable being,
    - c2b2b. than about movable being.

c3. But;

- c3a. in every movement opposition as regards term determines specific diversity.
- c3b. And therefore there is specific diversity between;
  - c3b1. the philosophy of nature,
  - c3b2. and the sciences of nature.

413. SCIENCES IN THE SECOND DEGREE OF ABSTRACTION; In the second degree of formal abstraction there is only one GENUS of sciences, to wit, MATHEMATICS. which, as said above (nn.389,409, B-C), is about quantity.

A. But;

a. The object of this science, to wit, quantity:

- al. since it abstracts:
  - ala. from sensible matter,
  - alb. not from intelligible matter,
- a2. is verified:
  - a2a. not in sense,
  - a2b. but in imagination, as said above (n.409,C).

b. For this reason:

- bl. the object of mathematics:
  - bla. is not necessarily of the order of real being,
  - bib. but has itself "permissively" relatively to real being and mental being (ens rationis), and is "indifferent to unreal quantity and true quantity" (John of St Thomas: Cursus Theol. I, q.6, disp.6, a.2, p.679).
- b2. 'Wherefore mathematics is not to be numbered among the parts of philosophy, which are versed about realities.

- B. "In the mathematical sciences:
  - a. "procedure is through those things only which are of the essence of the things only, since (these sciences) demonstrate through formal cause:
    - al. "and therefore something is demonstrated about one thing:
      - ala. "not through another thing.
      - alb. "but through the definition proper to that thing." (in Boethius de Trinitate, q.6, a.7l).
  - a2. In other words:
    - a2a. mathematics is science WHEREFORE (cf. n.389. A) or perfect science,
    - a2b. and as such, like metaphysics, is REGULATIVE of others (scientia RECTRIX - a QUEEN science).

C. Wherefrom it happens:

- a. that there arise certain intermediary sciences (scientiae mediae):
  - al. "which apply mathematical principles to natural things..
  - a2. "which however have more affinity to mathematics, because in their consideration:
    - a2a. "that which is physical, is as it were material,
    - a2b. "but that which is mathematical, as it were formal." (in Boethius de Trinitate, q.5, a.3, ad 6).

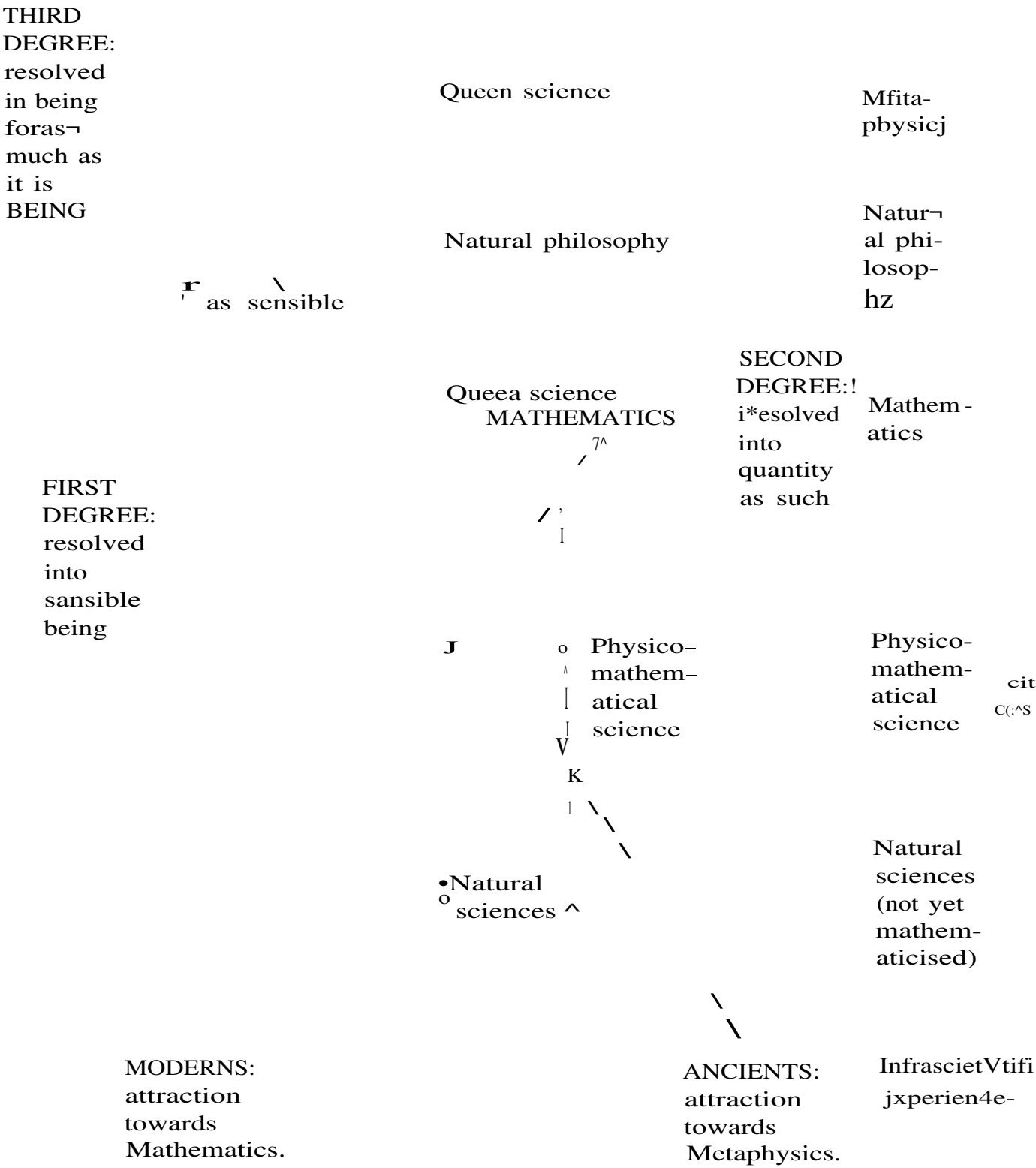
- b. These PHYSICO-MATHEMATICAL sciences;
  - bl. although formally mathematical,
  - b2. are nevertheless more physical; "simply speaking they are natural sciences" as Cajetan rightly says, following St Thomas, who says with Aristotle; "that they are more natural." (II-II, q.9, a.2, ad 3).

414. SCIENCE IN THE THIRD DEGREE OF ABSTRACTION: In the third degree of formal abstraction is found only METAPHYSICS or FIRST PHILOSOPHY.

A. That there is found no positive science under this degree, is clear from this, that this degree of abstraction is abstraction from ALL matter.

B. Wherefore there is no room for any science other than first philosophy, which is about being inasmuch as it is being.

415. SCHEMATIC SUMMARY; All that has been said in the foregoing article upon the general division of sciences is summarised in the following schematic diagram, borrowed from the work of Maritain; Les Degres du Savoir', p.79).



ARTICLE FOUR.

MODERN DIVISIONS OF THE SCIENCES.

416. CHIEF MODERN DIVISIONS OF :: Something is to be added now regarding the chief divisions of the sciences proposed by modern writers. They are:

A. The BACONIAN DIVISION, proposed by Francis Bacon (1561-1626), which will be dealt with first (n. 417).

B. fTho A MPF.RTAN DIVISION, proposed by A. M. Ampere (1775-1836), which will be dealt with next (n. 418).

C. The COMTIAN and. SPENCERIAN DIVISION, proposed by  
Auguste Comte (1796-ifeST) and Herbert Spencer (1820-1903), which will then  
be considered (n. 419).

417. THE BACONIAN DIVISION: This will be first exposed, then judged.

A. EXPOSITION: Bacon divides the sciences subjectively  
according to the diverse faculties of the knower: to memory corresponds  
history; to imagination corresponds poetry; to reason corresponds philosoj '

a. HISTORY is subdivided into:

- a1. natural history,
- a2. civil history,
- a3. and sacred history.

b. PHILOSOPHY is subBivided into three parts, to wit: the  
science of God, the science of nature, and the science of man.

b1. In the science of GOD occurs the treatment:

- bla. not only of God,
- bib. but also ofspirits of angels.

b2. The science of NATURE is divided thus:-

			On the principles of things.
		Particular physics:	On the form of things. On the diversity of things.
			On the measure of movements.
	SPECULATIVE	Appendices	On natural problems. Verdicts on the ancient philosophers.
		Metaphysics	On forms. On causes.
Science of nature:		Mechanics. PRACTICAL Natural magic.	
			Geometry. Pure Arithmetic. Algebra.
	MATHEMATICS		Perspective. Mechanical mathematics.
		Mixed	Astronomy. Cosmography. Architecture. Engineering.



1)3. The science of MAN is divided thus:-

Science of man:	In general	On the human individual.
		On the union of soul and body.
	In himself	Medicine.
		On the body Athletics.
		On enjoyments.
	In special	sensible.
		On the soul rational.
		Science of conservation.
	In society	Science of business.
		Science of government.

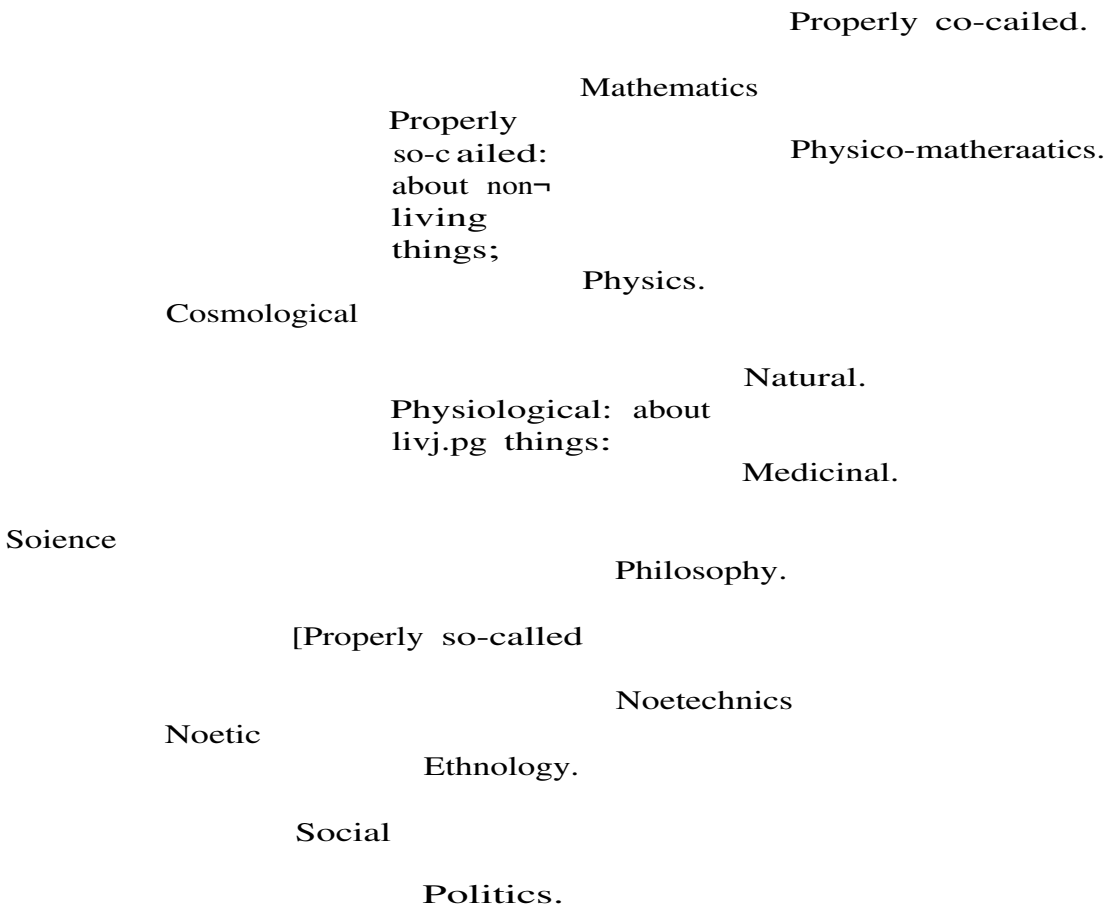
- c. POETRY is subdivided into:
- c1. epic science;
- c2. dramatic science;
- c3. didactic science.

B. JUDGMENT UPON THE BACONIAN DIVISION:

- a. This division has been extensively exposed in order that it may appear how Bacon:
  - a1. after first dividing sciences subjectively,
  - a2. then divides philosophy materially.
- b. But:
  - b1. The question:
    - b1a. of the rectitude of this division is of less interest (since it is already evident from what has been said in previous articles above that it is not a right division),
    - b1b. than the question of the foundation of this division: which foundation is the empiricism of Bacon;
    - b1b1. in virtue of which science cannot be obtained save exclusively by means of observation of nature, by means of experience and-by induction.
    - b1b2. From which it follows:
      - b1b2a. that a division according to formal objects is impossible,
      - b1b2b. only division according to material objects and faculties being possible.
  - b2. Moreover, these three faculties according to which Bacon divides the sciences:
    - b2a. are:
      - b2a1. neither of the same nature,
      - b2a2. nor independent of each other,
    - b2b. and concur in every intellectual knowledge whatsoever.

418. THE AMPERIAN DIVISION: This will be first exposed, then judged.

- A. EXPLANATION; Ampere divides the sciences on the score of their material object, into cosmological science (or sciences of natural things) and noetic sciences (or sciences of spiritual things).
  - a. The more general divisions are as follows:-



- b. These last members are further subdivided, so that there are one hundred and twenty-eight lowest species of science.
- B. .TTITOOTOT UPON THE jVMPTgRTAN DIVISION: Althoixj^ very different from the Baconian division:
- a. This Amperian division:
    - a1. is based upon the same foundation, to wit, empiricism,
    - a2. which excludes the possibility of dividing the sciences according to degrees of abstraction.
  - b. Moreover, it is clear that the material object, since it is not of the order of scientific knowability:
    - b1. cannot specify the sciences,
    - b2. but, if taken as the principle! of their specification, and accor¬ding as the foundation of their division, wo\ld disgregate them into a numberless multitude.

419. THE DIVISION OF COMiJ AND SPENCER: This, similarly, will be first exposed, then judged.

A. EXPOSITION:

a. COMTE, in elaborating a new classification of the sciences, wishes to establish the sciences, heretofore based on theology and metaphysics, on a positive (and positivist) foundation. By reason of the simplicity of their material object, he distinguishes three ja:\*incipal genera of sciences, proceeding from the more abstract and simple (concerned with the discovery of laws and therefore abstract) to the more concrete and composite (concerned with singular things, and therefore not abstract, but descriptive), thus:-

Most abstract and universal: Mathematics.

		—	Astronomy.
		Inorganic physics	properly so-called, Chemistry.
Science	Less abstract and universal: Theoretical science:		Biology.
		Organic physics	Sociology.
		—	

Least abstract and universal: Descriptive science: Concrete physics.

h. HERBERT SPENCER:

hi. Distinguishes three orders of science, thus:

		Mathematics.
	Abstract	
		Logic.
		Mechanics.
Science	Abstracto-concrete or explicative:	Physics. Chemistry.
		Astronomy.
	Concrete or descriptive	Psychology.
		Sociology.

- b2. This division has affinity with the division proposed by Comte, and likewise proceeds by reason of the simplicity of the material object:
- b2a. for the material, objects of the abstract sciences are of greater simplicity than are those of the concrete sciences.
  - b2b. Indeed, Spencer distinguishes philosophy from scientific knowledge only according to degree of universality,

B. Upon Comte's and Spencer's division; Both these divisions proceed from positivism; for positivism being given, there can be no division save on the score of material object.

- a. Positivism indeed:
  - a1. admits some abstraction, but only total (extensive) abstraction (cf. n.408);
  - a2, for which reason the object, even abstract:
    - a2a. does not become formal.
    - a2b. but, even endowed with some degree of universality, remains material.
- b. Both divisions corrupt the notion of philosophy, according to the tenets of positivism, according to which our intellect cannot transcend the order of phenomena.
- c. The opposition between descriptive and explicative sciences is unjustified: for explanation and description cannot be the foundation of the specification of sciences:

- c1. since every science;
- cla. is in some respect descriptive,
- clt. and of itself tends towards explanation;
- c2. for -wiiich reason sciences are unjustifiably distinguished through the differences \*concrete cr descriptive\* and \*abstract or explicative\*.

CHAPTER THIRTY-NINE.

SUBALTERNATION OP SCIMGES.

420. ORDER OP PROCEDURE: This treatment of the subalternation of sciences:

- A. Will deal:
  - a. First. with the notion of subalternation as understood here.
  - b. Secondly, with the subalternation exercised among the sciences: but since this subaltemation is threefold, to mt, on the score of end, car the score of principles and on the score of objects, · this treatment will exnsider:
    - b1. In the first place, their subalternation on the score of end;
    - b2. In the second place, their subalternation on the score of principles;
    - b3. In the third place, their subalternation on the score of objects,
  - c. Thirdly, the effect of subalternation upon the perfection of the subaltemate science.
- B. Hence the following order

	Notion of subalternation,	Article one.
	On the score of end	Article two.
On the subalternation of the sciences:	Subalternation exercised by the sciences:	On the score of principles....Article three.
	On the score of objects.	Article four.
	Effect of subaltemation	Article five.

ARTICLE ONE.

NOTION OF SUBALTERNATION.

421. SPECIFIC DISTINCTION; SEPARATION OR INDEPIM)ENCE; AUTONOMY; V/ith the specific distinction of sciences is not to be confused their separat- ion cr independence.

- A. For two sciences may be specifically distinct from each other, without being separated from each other or independent of each other.
  - a. For distinction;
    - a1. is not division or separation, - Tnhich negates unity;
    - a2. but is lack of identity (cf. n.III), - which negates identity.
  - b. Nevertheless, modern writers, - illegitimately - use the notions 'distinct' and 'separate or independent' promiscuously, under the name of 'autonomy'.

B. But it is evident:

- a. that specific distinction and independence are not synonymous terms.
- b. And:
  - b1. though distinct sciences may be independent of each other,
  - b2. yet not all sciences are independent of each other.

C. The word 'autonomy' from its own force has more the meaning of independence than of specific distinction.

- a. However, in point of fact, it is more often used today:
  - a1. to signify specific distinction,
  - a2. without implying utter independence.
- b. Accordingly this term 'autonomy' is to be used with caution.

422. **SUBALTERNATION AND ITS SPECIES:** But sciences which depend on other sciences are said to be subalternate to them. And the sciences which hold another science under dependence on themselves are called subalternating sciences.

A. Therefore SUBALTERNATION is the state of subordination or of dependence of sciences upon each other.

B. But:

- a. since in every science there may be considered three heads, on the score of which there may be subalternation, to wit :
  - a1. the end of the science,
  - a2. the principles of the science,
  - a3. and the object of the science;
- b. subalternation among sciences is of three species.

#### ARTICLE TWO.

##### SUBALTERNATION BY REASON OF END.

423. **PROPER TO PRACTICAL SCIENCES:** This subordination is found only among practical sciences (cf. nn.396-401);

A. For practical sciences are the only sciences which move to act. (cf. nn.396-397).

3. But this subalternation on the score of end may be either proper or improper.

424. **PROPER SUBALTERNATION ON THE SCORE OF END:** If there is proper subalternation of the ends of two sciences:

A. in such fashion that the end of one has itself to the end of the other as a proximate end has itself towards an ultimate end,
 

- a. that is, as essentially ordered towards that end of the other science,
- b. just as for man as he is here and now called to a supernatural end, the end of moral philosophy is a natural end subordinate to the supernatural end of moral theology;

B. then:

- a. these sciences are subordinated also at the same time:
  - a1. by reason of principles,
  - a2. and by reason of object;
- b. because in practical sciences end and principles coincide.

C. In either case this subalternation is confused with subalternation by reason of principles or by reason of objects - dealt with in the two following articles.

425. **■MFROPm SUBALTEHNATION ON THE SCCPJS OF END;** But subalternation of sciences on the score of ends may be otherwise:

A. to wit, in such fashion that the subalternating science uses the end of the subalternate science:

- a. as an instrument. or as a means.
- b. not as an end.

B. In this case:

- a. there is no proper subalternation,
- b. for:
  - b1. the subalternating and subalternate science pertain to the same science;
  - b2. since the same is the science:
    - b2a. which is about the end,
    - b2b. and which is about the means to that end.

C. In this fashion is moral philosophy conceived by those, such as Deman and Rarm.rez, v/ho -

- a. wrongly, as will be seen below (nn.499-502),
- b. think that for man called to the supernatural order, there is no longer a true moral philosophy specifically distinct from sacred theology.

### ARTICLE THREE.

#### SUBALTERNATION BY REASON OF PRINCIPLES.

426. **TWOFOLD SUBALTERNATION BY REASON OF PRINCIPLES:** Subalternation by reason of principles is had when one science gets its principles from another science.

A. Thus:

- a. does sacred theology borrow its principles from the science of the blessed (of the beatified, i.e. of those having the beatific vision).
- b. does natural philosophy get its principles from metaphysics.

3. But not in the same way.

427. **SUBALTERNATION SIMPLY TAKEN:** For sacred theology borrows its principles from the science of the blessed in such fashion that these principles are evident only in the science of the blessed, and cannot be resolved by sacred theology into self-evident principles.

A. In other words, only in the science of the blessed, are the principles of sacred theology seen.

B. Such subalternation, IN WHICH THE SUBALTERNATE SCIENCE HAS ONLY PRINCIPLES MANIFESTED BY ANOTHER SCIENCE, so that from itself it does not resolve them into self-evident principles, is called SUBALTERNATION SIMPLY SPEAKING.

C. These sciences, to wit, the subalternate and the subalternating:

- a. although they are concerned about the same material object,
- b. nevertheless:
  - b1. attain it under a diverse formal reason whereunder (nn.403-405),
  - b2. and so are NOT subordinated BY REASON OF OBJECT.
- c. Therefore they are specifically distinct from each other. (Cf.n.406).

428. **SUBALTERNATION IN A QUALIFIED SENSE:** But between natural philosophy and metaphysics the subalternation of principles is otherwise.

- A. For natural philosophy:
  - a. from itself resolves its principles into self-evident principles, and so sees its own principles;
  - b. nevertheless from metaphysics it gets certain principles TO LEAVE. SIMPLY OR TO DEPEND ITS OWN PROPER PRINCIPLES: for the principles of natural philosophy, in the order of the first degree of abstraction:
    - b1. though self-evident indeed,
    - b2. are only contractions of principles of metaphysics whereby they are defended.

3. Thus the principle of the composition of bodies from matter and form:

- a. self-evident indeed in the order of natural philosophy,
- b. is a contraction of the metaphysical principle of the division of being into potency and act.

C. Such subalternation, IN WHICH THE SUBALTERING SCIENCE RESOLVES ITS PRINCIPLES INTO SELF-EVIDENT PRINCIPLES. is called SUBALTERNATION IN A QUALIFIED SENSE (secundum quid).

429. SUMMARY: Accordingly:

- A. SUBALTERNATION SIMPLY SPEAKING:
  - a. is had when one science depends on another for the seeing of its principles (not itself seeing them);
  - b. And thus is sacred theology subalternate to the science of the blessed.
- B. But SUBALTERNATION IN A QUALIFIED SENSE:
  - a. is had when one science depends on another:
    - a1. not indeed for the seeing of its principles (for itself sees them)
    - a2. but for the defence of its principles.
  - b. And thus is natural philosophy subalternate to metaphysics.

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#### ARTICLE FOUR.

#### SUBALTERNATION BY REASON OF OBJECTS.

430. SUBALTERNATION OF INTERMEDIARY SCIENCES: Besides the subalternations \* so far mentioned, there is found another mode of subalternation, to wit, that of intermediary sciences. (Cf. n.413, C).

- A. Let us take the example of physico-mathematical science:
  - a. Materially it is concerned about the same object as physical science;
  - b. however/FORMALLY. by an accidental difference, its object is distinguished from the object of mathematics:
    - b1. for its proper object is the same as the object of mathematics,
    - b2. but with an accidental difference borrowed from physical science (and foreign to the specific nature of the object of mathematics).

B. By reason of this accidental difference, physico-mathematical science is subordinated on the score of its object to mathematics.

a. It differs indeed specifically from mathematics, because its formal object contains something which is not contained under the object of mathematics.

a1. It would not indeed differ specifically, if the difference were specific, so that one would be about the genus while the other were about the species; for genus and species are considered by the same science.

a2. Neither would it differ specifically, if one were about a subject, while the other were about its properties: for a subject and its properties are considered by the same science.

c. "'Per se' the habit of the proximate principles of the subalternating science is the subalternating scientific habit.

d. "The subalternating and subalternate science are not necessarily opposed on the part of (material) object nor on the part of subject (formal object), but rather on the part of the conditions of the medium: to wit, because the medium in the subalternating science is immediately joined to self-evident principles, but (the medium) of the subalternate science mediately, to wit, by the medium of a habit of another species." (Cajetan: *ibid.*).

d1. But where there is not this opposition on the score of object (material or formal):

d1a. there is not had an intermediary science,

d1b. nor a science subordinated by reason of its object,

d1c. but a science subordinated by reason of its principles only.

d2. Such is the case with sacred theology:

d2a. which is about the same object as the science of the blessed,

d2b. and yet is subordinated to that science by reason of its principles, which it receives from that science (receiving them, in the theologian not yet having the beatific vision, by the medium of faith).

#### ARTICLE FIVE.

##### EFFECT OF SUBALTERNATION.

432. A subalternate SCIENCE IS THE SAME HABIT WHETHER IT HAS CONTINUITY WITH THE SUBALTERNATING SCIENCE AND IF IT HAS NOT CONTINUITY THEREFROM:

This question is raised on account of the state in which sacred theology has in us (in theologians who have not the beatific vision), in whom sacred theology gets its principles from the science of the blessed without resolving them into self-evident principles (without seeing them), but only believes them.

A. Thus:

a. In the theologian not together having the science of the blessed:

a1. sacred theology is not in continuity with the science wherefrom it takes its principles (i.e., with its subalternating science),

a2. so that this theologian does not at all see his principles.

b. Whereas in the theologian who together has the science of the blessed:

b1. sacred theology is in continuity with the science wherefrom it takes its principles,

b2. so that this theologian:

b2a. though not by his habit of theology does he see its principles,

b2b. nevertheless sees them (by the medium of his other science).

B. It must be said indeed that the habit of such non-continued subalternate science is the same as if it were continued. For it demands, and is inclined unto, continuation therewith:

a. For one who acquires the habit of the subalternate science separately from the subalternating science 'per se' proceeds from principles pre-suppositively evident.

b. Which would not be the case if it did not 'per se' incline to their manifestation: which is effected through continuation with the subalternating science.

C. Therefore:

a. it must be said:

a1. that for this habit of science:

a1a. there is not substituted another,

a1b. but the same habit is perfected by continuation;

a2. for if continuation destroyed the habit, in vain would it demand the continuation.

b. Therefore the habit of the subalternate science is the same:

b1. whether it be in continuity,

b2. or be not in continuity.



433. NEVERTHELESS THIS HABIT IS IN AN IMPERFECT STATE IN A  
 SUBJECT WHO CANNOT IN POINT OF FACT RESOLVE ITS PRINCIPLES  
 IN THE SUBALTERNATING SCIENCE: From what has been said just above:

- A. This conclusion is evident, since;
- a. that it be in continuity indicates a perfect state of it,
  - b. and that it be not in continuity indicates an imperfect state of it.

B. Nevertheless this state of imperfection is diverse according as the non-continued subalternate science assumes from the subalternating science:

- a. Principles pre-suppositively and radically certain: which is the case whenever the subalternat4 science is based on the fallible authority of a higher science.
- b. Or principles actually certain, although not evident: as is the case with sacred theology (in the theologian not having the science of the blessed), for this theology is based upon infallible faith.

SCHEMATIC SUMMARY.

434. SCHEMATIC RECAETULATION: V/hat has been said regarding the sub-alternation of sc fences may be thus schematically summarised: -

		Then the two are specifically distinct sciences;
	either as a proximate end to an ultimate end:	And then is had proper subordination of ends.
OF PRACTICAL SCIENCES occurs by subalternation of ends, so that the end of the one is subordinated to the end of the other: and then;		Thus is moral philosophy subalternate to sacred theology.
		Then the subalternate is absorbed by the subalternating, and the two are not specifically distinct sciences.
	or as a pure means to an end:	And then is had improper subordination of ends.
Subalternation		Thus according to Deman and Ramirez would moral philosophy be absorbed by sacred theology.
		either simply: thus is sacred theology subalternate to the science of the blessed: for from itself it does not resolve its principles..
	either of principles only: and then:	or in a qualified sense: thus are the diverse sciences subalternate to metaphysics: for from themselves they resolve their principles.
OF SPECULATIVE SCIENCES occurs by reason of principles: and then:		
		or also of objects; This is the subalternation of intermediary sciences.

SECTION NINE.

SCIENCES IN SPECIAL,

435. ORDER OF PROCEDURE: Having exposed those considerations which pertain to science in general, we come now to examine diverse questions which are concerned about the sciences in special.

A. However this examination will be restricted to those things which belong to a philosophical consideration of the sciences.

B. Regarding philosophy itself no more will be said here, since what concerns it has been said, or is said, in appropriate places.

C. With respect to the method of the diverse sciences:

- a. this will be indicated here in general only;
- b. to speak of it in special, pertains to the respective sciences themselves

D. Accordingly this treatment (of the sciences in special:

a. will consider:

- a1. First, mathematical science.
- a2. Secondly, the sciences of nature,
- a3. Thirdly, moral science.
- a4. Fourthly, sociology.
- fifthly, history.

b. Hence the following order :-

Mathematical science..	Chapter forty,
The sciences of nature	Chapter forty-one.
On the sciences Moral science..	Chapter forty-two.
in special! Sociology....	Chapter forty-three.
History.....	Chapter forty-four.

CHAPTER FORTY.

MATHEMATICS.

436. ORDER OF PROCEDURE: This treatment of mathematical science:

A. We will deal with:

- a\* First, mathematical notions.
- b. Secondly, mathematical principles.
- c. Thirdly, mathematical demonstration.

3. Hence the following order:-

	Mathematical notions.....	Article one.
On	Mathematical principles...	Article two.
mathematics	Mathematical demonstration	Article three.

ARTICLE ONE.

MATHEMATICAL NOTIONS.

437. ORDER OF PROCEDURE: This article devoted to mathematical notions:

- A. Will consider:
  - First, the object of mathematics.
  - Secondly, number.
  - Thirdly, geometrical notions.
  - Fourthly, the origin of geometrical notions,
  - Fifthly, mathematical definitions.

B. Hence the following order:-

	The object of mathematics.....	Dissertation one.
	Number.	Dissertation two.
On	Geometrical notions.....	Dissertation three.
mathematical	Origin of geometrical notions. —	Dissertation four.
notions	Mathematical definitions... —	Dissertation five.

DISSERTATION ONE.

OBJECT OF MATHEMATICS

438. THE OBJECT IS QUANTITY: Mathematics is about quantity, concerning which it conducts an investigation of its properties.

439. NATURE OF QUANTITY: But quantity is twofold, to wit:

- A. Discrete quantity eg\* number: which is dealt with by:
  - a. arithmetic,
  - b. and algebra.
- 3. Continuous quantity: which is dealt with by geometry.

DISSERTATION TWO.

NUMBER.

440. NATURE OF NUMBER: Regarding this it must be said that:

parts<sup>of</sup>ua<sup>^</sup> ~~\_\_\_\_\_~~ rises from actual separation of the

- B. :<sup>om</sup> this separation results a multitude, which:
- a. if it be numbered or measured by some unit of quantity
  - b. constitutes predicamental or quantitative number. <sup>^</sup>

4-41. FINITE miB-FIR! But:

- A. Nuniber:
- a. concerning which mathematics treats:
    - al. not only abstracts from the individual and sensible be which quantity has in things,
    - a2. but abstracts in the second degree of abstraction, vidiich:
- 413) <sup>^</sup> considers quantity solely in intelligible matter (cf. nn.409,

b. Therefore: imagination, as said above (n.409<sub>1</sub> C).  
HAVE \*a!P\_it3\_OEL.f03S\_e, it is 1®!® TO

highest importance for determining the nature of  
the..diverse numbers, whereof the mathematician tr<sup>e</sup>ats. \_\_\_\_\_  
abstracted from rea quantity is called an

itsai?: S:  $\frac{1}{2} = m$

princip!Sr measured\_<sup>;</sup>gther unit ;<sup>^</sup>S.. than the common nuniber and its  
o' obtained a rational number or proportion;  
a2. thus, £or<sup>^</sup>\_an|<sup>^</sup>, the number 3, first measured"by one or 1, can  
be again measur<sup>^</sup> by another unity, which is the third part of the former  
unity; then is had the rational number:

$$\frac{1}{3} \times \frac{1}{3} = \frac{1}{9}$$

AN IIWmRAnfprl<sup>^</sup>T<sup>^</sup>ITS® PARJ OF A PORIVIER MjASURE. i.n. A papt "WThu to jA<sup>^</sup>TY A NmBER MOSS UNITY IS  
ComiM, IN A>-oigl|fjy OP f ^Of the

the ~ SmQK to the measure and

- a. then is obtained an irrational number:
- b. for example:
  - b1. "Tt = 3.1415926533589;
  - b2. V2 = 1.414215.

E. All these numbers are finite. Just as in an integral nuniber;  
a. so t<sup>^</sup>t ration<sup>^</sup> and irrational numbers are finite.  
(indefinite)!"<sup>^</sup> repugnant that a quantity measured by a "unity be infinite

442. TRANSFINITB NUMBER: Nevertheless:

- A. Mathematicians speak:
- a. not only of finite number,
  - b. but also of transfinite number, or indeterminate nuniber, or rather  
of number vi<sup>^</sup>ose determination is not utterly rigorou~'

TdI. For example:

Tala, let X be a transfinite number; then:

blal. since X is not rigorously determinate,

bla2. it can rightly be said:

$$X = X + 1,$$

c. Authors dispute as to:

cl. what value this number has.

c2. and whence does it arise.

3. Some say that transfinite number:

a. is:

al. a MEE^ CONVENTION,

a2. and arises from some 'a priori\* form.

b. Thus speak IDEALISTS. according to whom mathematical notions are constructed by intellect freely, without the intervention of experience.

C. But others say that;

a. transfinite number:

al. BIPLIES CONTRADICTION,

a2. since there is no corporeal quantity vsfeich is not finite.

b. Thus speak EMPIRICISTS. who recognise only one fount of knowledge, to wit, sensible experience.

D, BUT THE TRUE AESvTER IS that transfinite number is MENTAL BEING BASED IN THE REAL {ens rationis fundatum in re), that is, based in predicamental (real) quantity, not indeed immediately, but mediately.

a. For transfinite number is obtained by an analogical transposition:

al. from the order of mathematical quantity (of the second degree of abstraction),

a2. to the order of TRANSCEITOENTAL MLTITUDE (of the third degree of abstraction).

b. This transposition:

bl. is legitimate BY REASON OF THE NATURE OF THE SECOND DEGREE OF ABSTRACTION.

b2. according to which mathematical quantity has itself indifferently relatively to:

b2a. real being (ens reale),

b2b. and mental being (ens rationis).

c. Therefore TRANSFINITE NUIffier:

cl. directly pertains:

cla. not to predicamental (real) number,

clb. but to transcendental multitude, which accoi'ding to itself or from its own force is:

clbl. neither finite,

clb2. nor infinite.

c2. Indirectly however it is reduced to finite number, inasmuch as:

c2a. by'the medium of analogical transference to the transcendental order,

c2b. it:

c2bl. is based on predicamental quantity,

c2b2. and relatively to it is indirectly verified in imagination.

### DISSERTATION THREE.

### GEOMETRICAL NOTIONS.

443. GEOMETRY IS ABOUT CONTINUOUS QUANTITY: Geometry is about continuous quantity:

a. although it is not actually divided,  
 b. can be divided indefinitely into parts which before the division are distinct only in potency, as is shown in natural philosophy.

B. To the continuum pertains:

- a. both the permanent continuum,
- b. and the successive continuum, i.e.,
  - b1. time.
  - b2. and local movement which conjoins both continua.

444. **DIMENSIONS OF THE CONTINUUM;** With regard to dimensions it is necessary to distinguish as follows:

A. The permanent continuum, which exists in bodies, manifests three dimensions, to wit: length, breadth, and depth.

Voluminal quantity or volume is a continuous quantity constituted with three dimensions, to wit, length, breadth and depth.

Superficial quantity or surface is a continuous quantity constituted with two dimensions, to wit, length and breadth.

Linear quantity or line is a continuous quantity constituted with one sole dimension, to wit, length.

B. But the successive continuum exhibits one dimension only.

445. **PERMANENT CONTINUUM AS OBJECT OF GEOMETRY:** Of the permanent continuum geometry considers the regular figures (shapes), or qualities constituted from the diverse dimensions, as are the straight line, the curved line, the triangle, the parallelogram, the cylinder, the sphere, and so on.

446. **SUCCESSIVE CONTINUUM AS OBJECT OF GEOMETRY:** Likewise, geometry considers the successive continuum in the study of functions:

A. These functions are- defined: the correspondence of some series of values of one quantity, which is called a dependent variable, to the values of another which is called an independent variable.

B. These functions are graphically represented by means of two axes according to which the "co-ordinate" values of any binary or "point" are determined.

C. There are:

- a. many genera of functions;
- b. amongst which as the principal may be reckoned, on account of their theoretical properties and innumerable applications in the nature of things, continuous functions, which, the independent variable being varied in a continuous manner, are likewise varied in a continuous manner.

## DISSERTATION FOUR.

### ORIGIN OF GEOMETRICAL NOTIONS.

447. **THE QUESTION:** The question regarding the origin of geometrical notions from the regularity of geometrical figures, which are not found in sensible things.

A. Indeed there is not found in the nature of things a line perfectly straight, nor a circle perfectly round, from which, leaving individuality alone behind, we can abstract the nature of a straight line or of a circle.

B. The MATHEMATICISTS endeavour to answer this question:

- a. by saying that we rectify the almost exact figures found in nature.

b. But they cannot explain how this rectification can be made without a norm previously known of perfectly regular figures.

C. Modern CONCEPTUALISTS.

a. more or less Idealists:

- a1. not being able to explain true geometrical figures from experience,
- a2. teach that they are 'a priori' creations of our mind.

b. This answer:

- b1. is indeed coherent with idealism,
- b2. but not with moderate realism.

448. THE TRUE ANSWER: And so it must be said that geometrical notions are obtained through abstraction from sensible experience:

A. But:

a. Not through that abstraction of the first degree which:

- a1. leaves behind individuality alone,
- a2. retaining however sensible qualities:

b. But, just as in the case of numbers:

b1. by abstraction of the second degree:

b1a. which abstracts:

- b1a1. both from individuation,
- b1a2. and from sensible qualities,

b1b. retaining only:

- b1b1. intelligible quantity,
- b1b2. with the qualities proper to it.

b2. But this degree of abstraction;

- b2a. since it verifies its concepts in imagination,
- b2b. can imaginatively reproduce figures:

- b2b1. according to things that we see in nature,
- b2b2. but in employing nothing save quantity and its properties.

B. Thus:

a. "Among lines which join two points:

- a1. "we see some to be shorter than others;
- a2. "therefrom we are led to conceive one line which is shorter than all others, which we call:

- a2a. "the distance between the two points,
- a2b. "or the direction.
- a2c, "or the straight line passing through those points.

b. "But:

- b1. "the notion of a straight line once formed,
- b2. "it is easy to obtain the notion of a plane surface, through the continuous movement of some straight line constantly passing through one fixed point and intersecting another fixed straight line;

c. "Then of a parallel, or straight line which, on the same plane as the other, has the same perpendicular.

d. "Finally, of circumference, or of a line all the points of which are on the same plane, equidistant from one point; etc." (G-eny: Critica, pp.351-352).

DISSERTATION FIVE.'

MTHBIATICAL DEFINITIONS.

449. likTimiATICja. DEFINITIONS ARE EITHER ESSENTIAL OR OENEIIG: SVom the very na-ture of roatRSmatical notions it follows that the definitions found in these sciences are:

A.Either ESSIOTIAL, i.e. expressing THE VERY ESSENTIAL NOTIS.1.-QR-PRO'PERTIES; (cf. nn.169-170): for example:  
a. this definition of a circle: 'line every point of which is equi-  
distant from one point';  
hT this definition of a straight line; 'the shortsst- TTne between two  
point s'.

3. Or GENETIC, i.e. indicating the tlANNER IN WHICH THE NOTION,IS.  
FOBtTOD (cf. nn.169-170): for example:  
a. this definition of a circle: 'figure arising on one plane from the  
rotation of one point so moved as to keep the same clistance from anoth^  
point';  
b. this definition of six: 'number obtained by five times making to one  
an addition of one'.

SCHEtvUTIC SumiARY.

450. samiATIC SYNOPSIS: The contents of the fore-going article may be thus schematically summarized :-

Its nature: Multitude resulting from actual separation of the parts of quantity, measured by a quantitative unity.

Or number	Its^ analogous division: it is	"either real number: DMEDIATELY based in real quantity: FINITE number: this is	either INTEGRAL number, directly abstracted from real quantity.
			either Rational. or NON-INTEGRAL number: this is or Irrational.
On mathe- matical notions:	Their nature	or non-real number or transfinite number; TVTEp'fATER.Y based in real quantity (and therefore mental being with foundation in the real). Their OBJECT: the continuum: which is	either Permanent: line, surface volume. lor Successive: variables.
			either essential, Their DEFINITIONS are lor genetic.
On geo- metrical notions	Their origin	is NOT by an 'a oriori' creation of the mind, as say IDEALISTS.	by a rectification of the figures of things, as say Bff*IRICISTS.
			BUT IS by abstraction of the second degree.



## ARTICLE WO.

## MATHENIATICAL PRINCIPLES OR PROPOSITIONS.

451. **ORDER OP PROCEDURE:** This consideration of the principles of mathematics:

A. Will consider:

- a. **First.** the distinction which mathematicians make between axioms and postulates.  
 h. the nature of the postulates.

B. Hence the following order

On the principles of mathematics:	The distinction between axioms and <b>postulates</b> .	Dissertation one.
	The nature of the postulates	Dissertation two.

## DISSERTATION ONE.

## "AXIOMIS" AND "POSTULATES".

452. **PRINCIPLES OF MATHEMATICS:** Besides the notions which are the remote matter (cf. n.245) of mathematical demonstration:

A. There are found in these sciences proper principles, which are the proximate matter of the same demonstration.

3. But according to mathematicians, those principles would be of two genera, to wit:

- a. axioms.  
 b. and postulates.

453. "AXIOMS"; They call "axioms" self-evident propositions: such are these: 'two equals to the same third are equal to each other': 'from point to point a straight line can be drawn' 'from a given point, With a certain radius, a circle can be drawn'.

454. "POSTULATES": On the contrary, they call "postulates" indemonstrable propositions which, although they are not self-evident, are admitted without demonstration.

A. Thus the three "postulates" of Euclid:

- a. 'All right angles are equal'.  
 b. 'From a point on a plane, outside a certain line, only one parallel to that line can be drawn'.  
 c. 'Two straight lines do not circumscribe a surface'.

B. Among these, the second is famous under the title of "the Postulate of Euclid".

a. "Among the authors who have written upon it, Legendre says to it is equivalent this assertion: 'the sum of the angles of a triangle is equal to two right-angles'.

b. "It is well known that through the centuries innumerable authors have endeavoured to demonstrate 'the Postulate of Euclid':

- b1. "but without success;
  - b2. "nevertheless for one postulate another can be substituted."
- (Dario: Praelectiones Cosmologicae, p.73).

#### DISSERTATION T\*/0.

#### Nature of the "postulates".

#### 455. DOCTRINE OF THE ANCIENTS: The ancients taught:

- A. That the postulates:
  - a. are not of another genus than the axioms;
  - b. and therefore are propositions self-evident or immediately evident.
- B. And that they do not differ from the axioms save inasmuch as:
  - a. they are less universal,
  - b. and are more apt to enter into the very process of science.

#### 456. DOCTRINE OF MODERNS: Many moderns, although unanimous in denying the evidence of the postulates, diversely explain them:

- A. Some deny the certitude of the postulates:
  - a. Certain authors, such as Duguid Stewart and John Stewart Mill:
    - a1. in accordance with the tenets of empiricism,
    - a2. teach that the postulates:
      - a2a. arise from definitions obtained by induction,
      - a2b. and as such are only hypothetical.

H. Poincaré (Science et Methode, p.121):

- b1. teaches that the postulates are only more or less commodious conventions.
- b2. Thus he admits that the Euclidian geometry is more commodious than other geometries.

- B. Others, on the contrary, admit the certitude of the postulates:

- a. Kant explains this certitude by the aid of 'synthetic a priori' principles, in accordance with his subjectivist principles.
- b. Bertrand Russell, on the contrary, says that:
  - b1. the postulates are truths of experience,
  - b2. and are neither more nor less certain than certain other facts.

#### 457. SOLUTION: But it must be said that THE EUCLIDIAN POSTULATES ARE PROPOSITIONS MATHEMATICALLY INDIVISIBLE. BUT PHILOSOPHICALLY DEMONSTRABLE from the very nature of quantity.

A. But for the enacting of this proof:

- a. it is necessary to have a right notion of quantity itself, i.e. to have:
  - a1. the objective notion,
  - a2. not a subjective notion, which in point of fact most modern writers, more or less imbued with the tenets of idealism, have;
- b. for the postulates are nothing else than explanations of the notion of quantity.

B. The 'Postulate of Euclid' is thus demonstrated PHILOSOPHICALLY:

- a. Now:
  - a1. let there be the line AB;
  - a2. and let G be a point on the same plane, outside AB.

b. It is to be proved that from the point  $p$  only one parallel to  $AB$  can be drawn.

i

c. Let  $D$  be a point:

c1. on the same plane,

c2. equally distant from  $A$ , as  $C$  is from  $B$ ,

c3. and so placed that a line from  $C$  to  $D$  does not intersect  $AB$  (i.e. let it be placed on the same side of  $KB$  as is  $C$ .)

d. Now:

d1. Every parallel to  $AB$  drawn from  $C$ :

d1a. must be equally distant from  $AB$ ,

d1b. and therefore must pass through  $D$ .

d2. But through  $D$  can pass only one line drawn from  $C$ . For a point:

d2a. is not a part of a line indeed,

d2b. but is an indivisible terminating or continuing a line, or, in other words, a mode of a line, inseparable from the line.

d3. But the same mode of a line can belong to one line alone.

d4. Therefore from  $G$  one line alone can pass through  $D$ .

d5. Therefore from  $C$  only one parallel to  $AB$  can be drawn.

458. NATURE OF NON-EUCLIDIAN POSTULATES: But regarding non-Euclidian postulates MOTHER VERDICT MUST BE GIVEN:

A. ORIGIN OF NON-EUCLIDIAN GEOMETRIES :

a. "Direct proofs of the 'Postulate of Euclid' remaining unsuccessful, FATHER SACCHERI S.J.<sup>A</sup>, attempted a new way (Euclides ab omni naevo vindicatus, 1733);

a1. "he endeavoured to deduce those who would deny the axioms to some contradiction;

a2. "but contradiction was not found.

a3. "And something other, foreign quite to his intent, did Saccheri obtain: he became the precursor of those who propound 'non-Euclidian' geometries.

b. "Non-Euclidian geometries are series of deductions logically connected without internal contradiction, starting from a 'beginning' which is to some extent diverse from the Euclidian 'beginning'.

b1. "LOBACHEVSKY (1829) and BOLYAI (1832) separately, propounded a geometry wherein the sum of the angles of a triangle is supposed to be less than the sum of two right-angles; or, equivalently: many parallels to a certain straight line from a point of the plane are supposed to be possible.

b2. "Then RIEMANN (1854) propounded another geometry based upon this supposition: all the straight lines of a plane intersect a certain line; there are no parallels; or, in other words, the sum of the angles of a triangle exceeds the sum of two right-angles.

b3. "Later, the same (1865). HELMOLTZ. and others, through another method fashioned innumerable geometries: to wit, they excogitated diverse spaces. For RI5?LINTI taught these things:

bSiu ^The nature of space is to' be deduced from the concept of it; and the concept of space cannot be determined, unless it be taken under a wider concept. Now this wider concept is the concept of multiplicity many times. extended; and under this generic concept Euclidian space - real space - is: multiplicity triply extended. But the same generic concept admits also other determinations, namely, multiplicities three, once or four-times, five-times — . — extended. Whence spaces of any number of dimensions.

b3b. "Moreover, they say, spaces may be diverse by reason of their form: Euclidian space - real space - is 'plane', because it verifies the axiom of parallels; the other spaces are 'curved': spherical, pseudo-spherical; - of uniform curvature (like a sphere) or of variable curvature (like a hat); - of positive or negative curvature, etc." (Dario: Praelectiones Cosmologicae, pp.75-76).

## B. VALUE OF NON-EUCLIDIAN GEOMETRIES:

### a. On account of this origin:

a1. Modern writers regard these postulates as mere freely chosen conventions, without foundation in reality; and this indeed logically according to the tenets of idealism.

a2. But they cannot explain how the use of them could be in many cases successful, unless they admit:

#### a2a. Either:

a2a1. that those geometries are equally with the Euclidian in accord with reality;

a2a2. But falsely would this be admitted:

a2a2a. for neither contradictories nor contraries can be true together;

a2a2b. but the Euclidian postulates and those of the other non-Euclidian geometries are 'contrarily or contradictorily opposed'

a2b. Or. as some say, that these successes follow/ only accidentally ('per accidens' : by way of fluke) from false principles.

b. On the contrary, IT IS TO BE SAID that the VALUE of these geometries is one thing, while their APPLICATION to reality is another.

### b1. If their VALUE be considered:

bla. It is sufficient that the deductions in each series of postulates be logical and without internal contradiction (or, in other words, be according to the laws of formal logic);

bib. For from its own force, geometry, as said above (n.413, A.b);

blb1. is not about real being,

blb2. but is about being which has itself indifferently to real being and mental being".

b2. But if their APPLICATION to reality be considered: then by the very fact that it is their application to reality that is being considered:

b2a. it is no longer question of pure geometry,

b2b. but of applied geometry: and then it is to be said that this use;

b2b1. cannot be made directly: which those writers themselves implicitly confess, when they teach that no figure can be constructed on the basis of these postulates;

b2b2. yet can be made indirectly by an analogous transference into the Euclidian geometry, from which, by a transference in the opposite direction, they had their beginning.

### c. For these postulates:

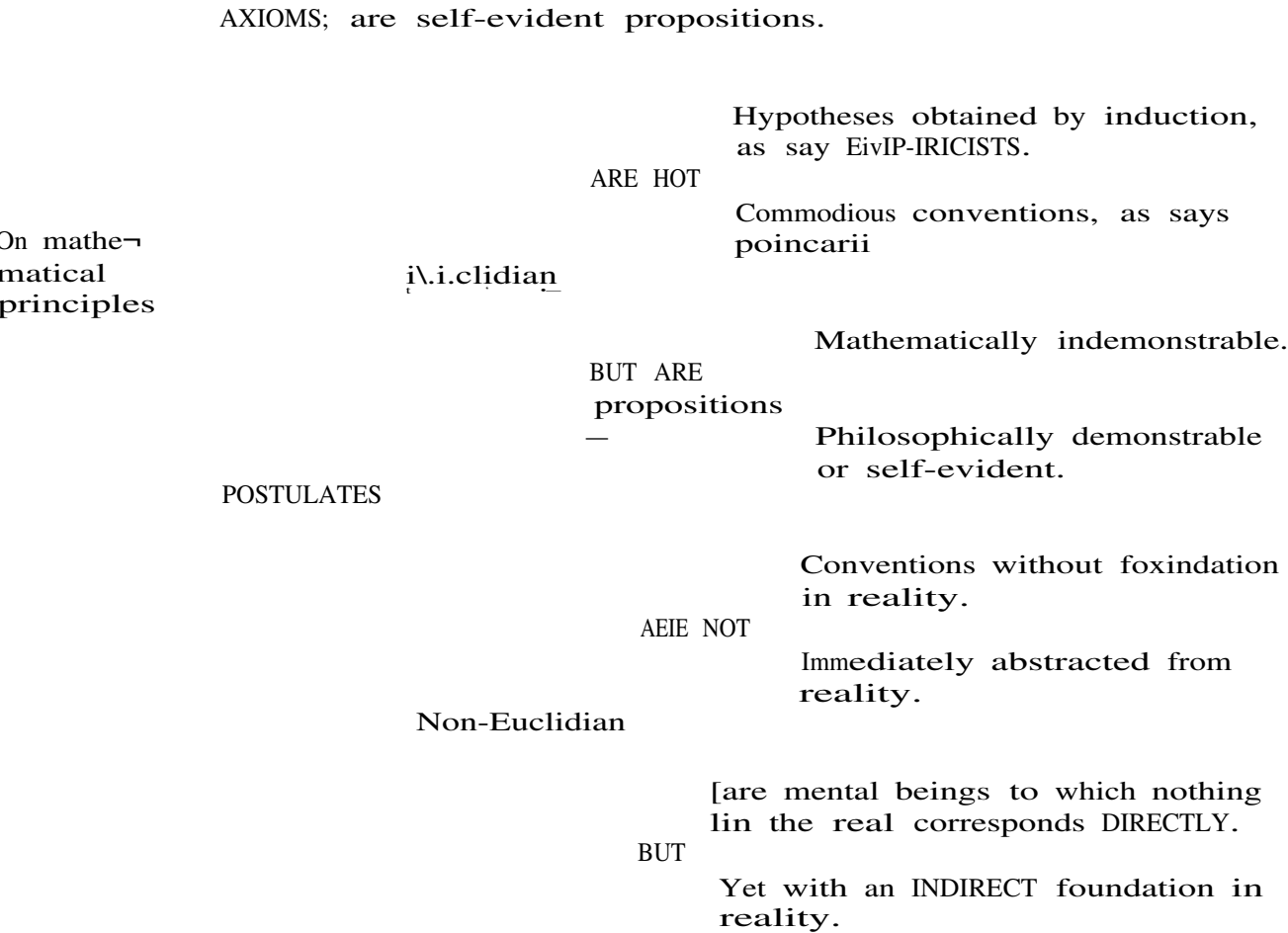
c1. although nothing in the real directly corresponds to them, and they are mental beings (entia rationis), nevertheless:

cla. are not, as certain writers say, fictitious beings without foundation in the real, (i.e. they are not unbased mental beings: cf. nn. 108-111),

- c1b. but. are mental beings with foundation in reality, to wit, in-  
predicamental quantity.
- c2. For;
  - c2a. from the Euclidian postulates, which are directly founded in  
predicamental quantity, viz. in the negation of them, do these non-Euclidian  
postulates analogically have their origin;
  - c2b. and therefore in them can they indirectly be imaginatively verified.

SCHEMATIC SUMMARY.

459. SCHEMATIC SYNOPSIS: The contents of the fore-going article may be thus  
schematically recapitulated



ARTICLE THREE.

MATHEMATICAL DEMONSTRATION

460. ORDER OF PROCEDURE: This treatment of mathematical demonstration:
- A. Will consider:
    - a. First, whether mathematical demonstration is deductive.
    - b. Secondly, whether mathematical demonstration is inductive.
    - c\* Thirdly, whether mathematical deduction is of another species than in other sciences.

B. Hence the following order

Whether it be **deductive.....Dissertation** one.

On mathematical demonstration:

Whether it be **inductive.....** .Dissertation two.

Whether deduction in mathematics be of diverse species than in other **sciences.....Dissertation** three.

### DISSERTATION ONE.

IN MATHEMATICS THERE IS TRUE DEDUCTION.

461. OPINIONS CONCERNING DEDUCTION IN MATHEMATICS; The question whether in mathematics there be true deduction is raised on account of:

A. Those who, like GOBLOT (Traite de Logique, 5me ed., p.266), deny that there is true deduction in mathematics.

3. Those who, like BRUNSCHWIG, continually set in opposition to each other:

- a. deduction,
- b. and mathematical reasoning.

462. TRUE DEDUCTION IN MATHEMATICS; But that in reality there is true deduction in mathematics:

A. Is easily proved from, the very example of mathematical reasoning advanced by Goblot: to wit: from the demonstration that the sum of the angles of a triangle is equal to two right-angles.

B. For the demonstration is enacted thus:

a. Given a triangle ABC:

a1. there is constructed a parallel CD to the line AB, thus:

a2. But this construction:

a2a. IS NOT YET THE DEMONSTRATION. - as Goblot thinks it is -

a2b. BUT IS ONLY THE DEMONSTRATION OF THE MEDIUM OF DEMONSTRATION.

b. But the demonstration proceeds thus:--

The sum of the angles of the triangle ABC is equal to the sum of the angles at the point C.

But the sum of the angles at the point C is equal to two right-angles. Therefore the sum of the angles of the triangle ABC is equal to two right-angles.'

463. THIS IS A SYLLOGISM PROPERLY SO-CALLED: NOR LET ONE THOUGHT that the fore-going syllogism is a merely expository syllogism or syllogism only improperly so-called (cf. nn.298-299), on the ground that its M is singular:

A. For:

apparently is the M singular,

b. for in reality "the above DEMONSTRATION is UNIVERSAL as regards all its propositions: for:

b1. it is not a demonstration about the triangle in the figure drawn,

b2. but is about every triangle. For:

b2a. it proves from the nature of triangle-that it have the sum of its angles equal to two right-angles,

b2b. and the figure drawn serves to no other purpose than to sustain by way of a sensible instrument the reasoning itself.

B. This therefore is the sense of the above-indicated demonstration:

"The sum of the three angles of a triangle is equal to the sum of the angles constituted from one angle of the triangle and two others which result from the protraction of one side of this angle and from the parallel of the side of the triangle subtending this angle and from the other side of the same angle.

But this sum is equal to two right-angles.

Therefore the sum of the three angles of a triangle is equal to two right-angles. \*

C. Therefore:

a. Quite logically - although falsely - Godel. BY REASON

OF HIS NOMINALISM, which can consider nothing beyond individuals:

a1. denies that in mathematics there is true deduction.

a2. For, given nominalism, there is had nothing more than a certain exposition of the construction.

b. Hence:

b1. Unjustifiably is Godel reprehended by Boyer (Cursus Philos. I, pp.288-289):

b1a. who regards that demonstration:

b1a1. as a singular demonstration,

b1a2. to which then MUST BE ADDED AN INDUCTION in order to obtain a universal conclusion.

b2. Such contention is to be utterly rejected.

DISSERTATION TWO,

IN MATHEMATICS THERE IS NO ROOM FOR INDUCTION.

464. THIS IS EVIDENT FROM THE NATURE OF MATHEMATICS: That induction can have no place in mathematics is evident:

A. From the very nature of mathematics.

3. For mathematics, of its very nature, abstracts:

a. both from the singular,

b. and from the sensible. (Cf. nn.409, 413).

465. IT IS ALSO EVIDENT FROM CONSIDERATION OF THE PROBLEM OF REASONING BY RECURRENCE: For the rest, that induction has no place in mathematics is evident from the discussion of the problem of reasoning by recurrence.

A. REASONING BY RECURRENCE ACCORDING TO POINCARÉ:

a. According to Poincaré:

a1. mathematical reasoning:

ala. would he a certain special type of induction,

alh. but in no way would it be deduction, v/hich Poincare regards as necessarily sterile.

a2. This special type of induction is 'reasoning by recurrence (La Science et hypothese, pp.18-20).

b. As an example of v/hat-Poincare^ calls reasoning by recurrence;

b1. Let us take the demonstration of the theorem:

$$a + 1 = 1 + a.$$

b2. The demonstration is as follows:

'If this is true when  $a = y$ , it will be true also when  $a = y + 1$ .

For if  $y + 1 = 1 + y$ , likewise  $(y + 1) + 1 = 1 + (y + 1)$ .

For  $y + 1 + 1 = 1 + y + 1$ .

Moreover when  $a = 1$ , the theorem is true: for  $1 + 1 = 1 + 1$ .

Consequently it will be true if  $a = 1 + 1 = 2$ ; likewise if

$$a = 2 + 1 = 3; \text{ and thus } *ad\ infinitum*.$$

V/herefrom it is to be concluded, by the aid of induction or by transition from singulars to universal, that the theorem is true for every number.'

B. WHAT IS TO BE THOUGHT OF THIS REASONING?

In reality it is a deduction to which is annexed verification in particular cases:

a1. A DEDUCTION indeed:

ala. V/hich is based on the nature of number, which is multitude measured by one (cf. nn.440-441).

alb. This deduction may be thus explicitly expressed

'Since number is multiplicity measured by one, no property can befit together  $n$  and  $n + 1$  save through something common, to wit, by reason of the unit v/hich measures  $n$ .

But what befits some number by reason of the unit which measures it, befits every number measured by this unit.

Therefore this property befits every number.'

a2. But we say also a VERIFICATION:

a2a. and we call it a verification because it is not able to prove a universal conclusion without the conclusion being illegitimate unless recourse is had to the nature of number;

a2b. and then by that very fact:

a2b1. it is no longer induction,

a2b2. but is true deduction.

b. Falsely indeed, moreover, does Poincare assert:

b1. that knowledges do not progress by the syllogism;

b2. this assertion - nominalistic - is not true, once the realism of intellect is admitted. (Cf. n.272).

## DISSERTATION TBRBE.

MATHEMATICAL DEDUCTION IS OF THE SAME SPECIES AS IN OTHER SCIENCES.

466. REASON OF THIS QUESTION: A doubt arises about the nature of mathematical deduction, on the ground that:

A. It is not a syllogism of inherence (i.e. a syllogism concerned about the in-being of P to S, or, in other words, a syllogism in which S and P are identified);



B. But is a syllogism of relation, to wit, of equality and inequality (i.e. about the equality or inequality of P to S).

467. ANSWER: It must be said that in reality;

- A. In these reasoning5:
  - a. The relation is predicated of the subject and is affirmed to be-in it.
  - b. Thus:
    - b1. this proposition; 'x = y',
    - b2. is really this: 'x is equal to y', " (Cf. n.de, C).
- 3. Indeed the principle of mathematical deduction, to wit:
  - 'two ^<vwhich are EQUAL to one same third are BQUAL to each other, and tiZ- whereof the one is UNEQUAL to a third while the other is EQJAL to. it.....are Uh^UAL to each other\*,
  - b. is nothing but the coarctation or contraction to the object of the second degree of abstraction of the general principle of deduction, to wit: 'two Y/hich arc the same to one same-third arc the same to each other, and two whereof the one is not the same to a third while the other is the sang to It. are not the s'ame .to'each other' (i.e.' the PRINCIPLE OP TRIPLE.IDENTITY and OP TfC SEPARATING THIRD, or simply the ERINCIPLE OP IDENTITY; cf. n.257, A.b).

SCHEvIATIC SUMMARY.

468. SCHEMATIC SYNOPSIS: The contents of the fore-going article may be thus summarised schematically:-

IS NOT induction, even when it is reasoning 'by recurrence\*.

Mathematical demonstration	Not improperly so-calle.d (singular or expository).
BUT IS deduction	Which is regulated by the supreme principle of the syllogism.
—	But properly so-called (universal)
	Yet as contracted to the object of the second degree of abstraction

CHAPTER PORTY-ONE.

THE SCIENCES OP NATURE.

469. ORDER OP PROCEDURE: This treatment of the sciences of nature;

- A. Will deal with:
  - a\* First. scientific facts.
  - b. Secondly, scientific laws.
  - c. Thirdly, scientific theories.

B. Hence the following order

	Scientific <b>facts</b> .	Article one.
On the sciences of nature	Scientific <b>laws</b> .	..Article two.
	Scientific <b>theories</b> ...	Article three.

ARTICLE ONE.

SCIENTIFIC FACTS.

470. ORDER OF PROCEDURE: This treatment of scientific facts;

- A. Will consider:
- a. First, the nature of natural sciences.
  - b. Secondly, the nature of a scientific fact.
  - c. Thirdly, the determination of a scientific fact.

B. Hence the following order

	Nature of natural <b>sciences</b> .	Dissertation one.
On scientific facts	Nature of scientific <b>fact</b> .	Dissertation two.
	Determination of a scientific fact	Dissertation three.

DISSERTATION ONE.

NATURE OF THE SCIENCES OF NATURE.

471. WHAT ARE THE SCIENCES OF NATURE; By the name 'sciences of nature' are to be understood the sciences of sensible-being, through its extrinsic and observable signs. (Cf. n.412).
472. TWO KINDS OF SCIENCES OF NATURE; These natural sciences are of two genera, to wit;
- A. Sciences of inorganic nature, such as physics, chemistry etc.
  - B. Sciences of organic nature, such as the biological sciences.
473. THESE SCIENCES PROCEED 'A POSTERIORI' ; Regarding these sciences:
- A. It is evident from their observable object that they proceed:
    - a. not 'a priori': since neither the natures nor the (philosophical; properties of sensible things are known;
    - al. directly in themselves,
    - a2. but only INDIRECTLY through extrinsic signs.
    - b. but 'A POSTERIORI';
    - b1. from the observation of facts and experimentation about facts,
    - b2. by means of which facts, through induction, they seek, verify, explain and co-ordinate laws.

B. For that reason, before all else, the nature of scientific facts must be explained.

#### DISSEATATION TV/O.

#### NATURE OF SCIENTIFIC FACT.

474. DIVERSE CONCEPTIONS OF SCIENTIFIC FACT: Regarding the nature of scientific fact two opposite extreme conceptions are had:

A. According to EMPIRICISTS and POSITIVISTS a scientific fact is a certain external datum in its physical reality as it is passively received by the intellect.

B. According to IDEALISTS, on the contrary:

a. It is a certain CREATION of intellect or of intuition (thus speaks Le Roy).

b. Therefore it has only a SYMBOLIC value.

c. Similarly, basing their conception on the same principles, the 'sociological school' of Durkheim regard a fact as a certain CONSTRUCTION of the mind.

475. TRUE CONCEPTION: But it must be said that IN FACT:

A FACT IS A CERTAIN EXTERNAL REALITY, ACCORDING AS IT IS APPREHENDED BY THE INTELLECT. WHEREOF EXTENSION OR LIMITATION.

B. Hence these three are found in every fact, to wit:

a. The object of some sensation;

b. The object of some intellectual apprehension, which discerns the datum of the sensation, without deforming it;

c. The object of a judgment of existence.

C. Fact is of threefold genus, to wit: VULGAR fact, SCIENTIFIC fact, and PHILOSOPHIC fact: each is specified by the object of apprehension.

a. For the specification of fact cannot result from the sensation or from the judgment of existence: for these are common to every fact.

b. Therefore:

b1. A VULGAR FACT is specified by a certain apprehension of COMMON SENSE, or, in other words, by a confused apprehension of the intellect (infra-scientific apprehension).

b2. A SCIENTIFIC FACT is specified by a SCIENTIFIC observation, to wit, by apprehension of the first degree of abstraction, according however as this resolves its concepts with reference to the observable (i.e. relatively to sensible being).

A PHILOSOPHIC FACT is specified by a certain PHILOSOPHIC apprehension, of the first or third degree of abstraction, but, if of the first degree, according as it resolves its concepts with reference to sensible being.

c. Therefore;

c1. just as neither can natural philosophy be based:

cla. on scientific facts,

clb. but can be based on philosophic facts only;

c2. so neither are the sciences of nature based;

c2a. on any sort of fact at all at random,

c2b. but on scientific facts. (Cf. Yves Simon; Les préoccupations expérimentales et les faits philosophiques, Revue de Philos, mai-juin, 1932, pp.273ss; G.Rabeau: Realite et Relativite, pp.159ss; Maritain; Les Degres du savoir, pp.102s,s).

349.

D. Further, among scientific facts, a MORAL fact is specified by the concept of a moral being, i.e. of a being which is defined relatively to the end towards which a free agent is ordered. For which reason:

- a. It is impossible to know what is a moral being, unless there be knowledge of its value for the free agent. For value is taken from end.
- b. This notion is of the highest importance for determining the nature of sociology.

f

### DISSERTATION THREE.

#### DETERMINATION OF A SCIENTIFIC FACT.

476. OFFICES OF EXPERIENCE IN THE SCIENTIFIC FACT: A scientific fact:

A. As it is something singular, is obtained by experience, whether sensitive (external or internal) or intellectual (for psychic facts).

3. But as it is specifically distinguished from a vulgar fact, it is obtained:

- a. not by any experience at random,
- b. but by scientific experience.

C. But as it differs from a philosophic fact:

a. wherefrom it differs inasmuch as it considers being as observable, this experience:

- a1. has not a merely material office,
- a2. but plays a FORMAL role: for the very concept which specifies a scientific fact;
- a2a. does not transcend experience,
- a2b. but is of the very observable itself.
- b. therefore, experience is of the highest importance.

477. TWOFOLD SCIENTIFIC EXPERIENCE: This experience is twofold. to wit: scientific observation and experimentation.

1. SCIENTIFIC OBSERVATION is an ATTENTIVE AND DILIGENT PERCEPTION BY THE INTELLIGENCE OF THE PHENOMENA WHICH OCCUR IN NATURE OR IN THE VERY SUBJECT ITSELF.

a. Observe that;

a1. Observation of the phenomena of nature, which is called external observation, has place in the physical, chemical, biological and psychological sciences.

a2. But observation of the phenomena which occur in the subject itself, which is called internal observation or introspection, is found in the psychological sciences alone.

b. Note also that:

External observation is conducted by the medium of the external senses and sensitive consciousness ('sensus communis');

b2. But internal observation is conducted by the intellect.

c. Both external and internal observation are aided by instruments, of which:

c1. "Some extend the ambit of some sense; v.g. optical instruments.

c2. "Others introduce into the object itself something which renders observation possible; v.g. Atwood, by retarding the fall of heavy bodies, subjected the phenomenon to measurement.

c3. "Others substitute for some sensation which is impossible, another which is possible, of another kind, but connected with the former; v.g. differences of heat, too small to be perceived by touch, are seen in a galvanometer.

c4. "Others record phenomena, in the absence, of the observer; v.g. continuous barometric or thermometric variations, etc." (Geny: Critica, p.343).

d. As regards the PROPERTIES of scientific observation, it must be:

d1. Complete, to wit, omitting no circumstance useful for the determination of the fact: to which a great contribution is made by a certain sagacity of intellect.

d2. Veridic or without prejudice, or, to use Bacon's phrase, "with the simplicity of a child".

d3. Exact. especially where it is question of measurement: for which are required both healthy senses, and perfect instruments, and a certain practical skill.

d4. Methodic. i.e. conducted according to the order which corresponds to the end pursued. For which great value is possessed by patience and fortitude (this latter, especially because in many observations danger is not lacking, v.g. when poisons, electricity etc, must be used).

B. FACPERDIEMTATION is A CERTAIN METHODIC OBSERVATION OF SOME PHENOMENA PROVOKED WITH A 'DIRECTIVE IDEA' BY THE EXPERIMENT OR K-INDUCTION BY MEANS OF DETERMINATE CIRCUMSTANCES.

a; It has a twofold office, to wit:

a1. that of determining facts,

a2. and that of verifying hypotheses in the inquiry of laws.

b. Its properties:

b1. are the same as those of observation (A.d),

b2. but it also supposes a certain inventive wit or ingenuity.

c. The determination of the methods of experimentation in the diverse sciences pertains to the respective sciences.

ARTICLE pro.

SCIENTIFIC LAWS.

478. ORDER OF PROCEDURE: This treatment of scientific laws:

A. Will consider:

a. First, the nature of scientific laws,

b. Secondly, the determination of scientific laws.

c. Thirdly, scientific conclusions.

3. Hence the following order:-

On scientific laws:	Their <b>nature</b> .	Dissertation one.
	Their determination...	Dissertation two.
	Scientific conclusions	Dissertation three.

DISSERTATION ONE.

NATURE OF SCIENTIFIC LAWS.

479. DIVERSE OPINIONS: Regarding the nature of scientific laws there is the same diversity of opinions as regarding the nature of a fact (cf. n.474).

A. Some, to wit, MECHANICISTS and ENERGISTS. although differing on many points, yet imbued with an empiricist or positivist philosophy,

- a. hold that laws are:
  - a1. nothing else than a generalization of empiric facts (thus, v.g. says Berthelot),
  - a2. or equations between the measurable elements of empiric phenomena (thus, v.g. says Mach.)
- b. Briefly, according to them: a scientific law is a merely empiric relation between phenomena.

B. Others, on the contrary, to wit, IDEALISTS;

- a. hold that scientific laws, like scientific facts, are merely symbolic constructions of the mind.

Thus, for example, says Le Roy, who writes: "Every law, far from our being able to declare it an element extracted from things, appears as a construction of the mind, a symbol and product of our aptitude to vary endlessly the angles under which we regard the constancy in the world. ...A scientific law is not a total, a resultant or an extract from facts, but a symbolic construction erected on the occasion of these." (*Science et philosophie. Rev. Metaph. et Mor.*, 1899, pp.518-526).

480. TRUE CONCEPTION: But, according to MODERATE REALISM, IT MUST BE AFFIRMED that a SCIENTIFIC LAW is indeed a RELATION (NOT BETWEEN PHENOMENA, BUT) BETWEEN SCIENTIFIC facts. Therefore:

A. Accordingly:

a. Since facts:

- a1. are not purely empiric phenomena,
- a2. but express, through observable phenomena, some undisclosed essence (for the intellect, whose apprehension specifies the fact, is concerned only about essences, which it attains at least in extrinsic, observable signs),
- b. this relation between phenomena:
  - b1. is not merely empirical-,
  - b2. but is ontological, based in essences;
  - c. and thus SCIENTIFIC LAW CAN BE DEFINED; ESSENTIAL RELATION BETWEEN SCIENTIFIC FACTS.

B. But this relation:

- a. inasmuch as it is essential,
- b. is:
  - b1. necessary,
  - b2. and therefore universal.

481. TRUE CONCEPTION OF SCIENTIFIC LAW: Scientific law is twofold, to wit, DESCRIPTIVE and CAUSAL.

A. A descriptive law, which already is essential, is:

- a. Either QUALITATIVE, v.g. 'A decoction from heliotrope becomes red if acetic acid be added to it.'
- b. Or QUANTITATIVE, v.g. the law of refraction of light.

B. A causal law, which expresses;

- a. not indeed the cause of a fact, that is, the action which by its actions produces it - "for, in the natural sciences the intellect must remain the order of the observable, i.e. in the order of the sensible and of the imaginable -
- b. but the NECESSARY CONDITIONS OF ITS APPEARANCE. (Cf. Maritain: *Les degrés du savoir*, pp.286-302; Eng. Trans, pp.178-188).
- c. For it is to be considered that:
  - c1. the concept of 'cause' as it is employed in the sciences of nature, is like other concepts, resolved:
    - c1a. not ontologically, as is the philosophical concept of 'cause',
    - c1b. but empiriologically, so that in the lexicon of sciences, 'cause' is nothing else than THE OBSERVED CONDITIONS OF THE APPEARANCE OF A FACT, or, in other words, THE CONDITIONS. WHICH CAN BE OBSERVED. A fact CAN BE PREDICTED.
  - c2. On account of which merely empirical notion of 'cause', without any indirect reference to being, contemporary scientists are logically obliged:

c2a. to substitute for\* the necessity of these conditions, the probability of them,

c2b. particularly on account of the impossibility, through mechanical laws, of accounting for, and predicting, the movements of a particle (v.g. electron) in a manner at each instant entirely defined; and thus have convinced temporary scientists, such as Heisenberg:

c2b1. arrived at "the principle of indeterminacy" or "relations of uncertainty",

c2b2. and spoken of a series of waves as "a bundle of probabilities".

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## DISSERTATION Title.

### DETERMINATION OF Scientific LAWS.

482. **SCIENTIFIC LAWS ARE DETERMINED BY INDUCTION:** Though more particular scientific laws can be deduced from more general scientific laws, as said above (n.378): .

A. Nevertheless scientific laws do not arise from facts by deduction,  
a. For facts imply only the existence of the fact without telling its nature.

b. But the necessary conditions of a fact cannot be known by deduction, unless its nature be known.

B. Therefore only by induction can scientific laws be determined.

483. **IRRESOLUTION OF INDUCTION;** The nature of induction has been dealt with above (nn.301-312).

A. But it is question here of the IRRESOLUTION of induction,

B. Which preparation is twofold, to wit:

a. HYPOTHESIS, which will be treated first (n.484).

b\* METHODS OF INDUCTION, which will be treated of next (n.485).

484. **HYPOTHESIS;** Since the natural sciences draw their laws from facts by induction, hypothesis, which pertains to the preparation of induction, plays a very great, and necessary, part in the processes of these sciences.

A. An HYPOTHESIS is a PROVISIONAL EXPLANATION OF FACTS.

a. Compared with scientific law;

a1. it agrees in this, that it is an explanation of facts.

a2. but it differs insofar as it is only provisional, i.e. assumed until either verified or disproved.

b. Since it is an explanation of facts:

b1. it is not a mere guess, i.e. without foundation in reality,

b2. but is based upon reality, i.e. upon facts, as suggested ([not yet proved) by them.

c. Thus Benjamin Franklin;

c1. upon the suggestion of these facts, that lightning;

c1a. gives light as does an electric discharge,

c1b. manifests the same colour as an electric discharge,

c1c. proceeds in an irregular direction as does an electric discharge,

c1d. proceeds by swift movement as does electric discharge,

c1e. is conducted by metals as is an electric discharge,

c1f. explodes with a crackling noise as does electric discharge,

c1g. is maintained in water or ice as is an electric discharge,

c1h. results in the splitting of bodies as does an electric discharge,

c1h... kills animals as does an electric discharge,

clj. fuses metals as does an electric discharge,  
 elk, ignites inflammable matter with an accompanying sulphurous smell  
 as does an electric discharge;

c2. formed the hypothesis that lightning is an electric discharge.

c3. With this hypothesis he proceeded to verify or prove by the aid of his  
 'kite experiment'.

B. The OFFICE of hypothesis is twofold:

a. To ORDER or reduce to a unity of order the known facts: thus the  
 hypothesis of the vibration of ether orders luminous phenomena.

b. To DIRECT the experiments whereby the true explanation of the facts  
 is sought; in other words, it is the "directive idea" of experiment (cf. n.477,  
 B): thus, in the example given above, the hypothesis that lightning is an  
 electric discharge directed the 'kite experiment' of Benjamin Franklin.

C. The PROPERTIES or CONDITIONS of a good hypothesis ;

a. are these:

al. It must:

ala. contradict no truth:

alb. though, since an hypothesis which explains many facts is rarely  
 totally false, at least some part agreeing generically or analogically with  
 the true explanation, it may still be used in spite of its known falsity as  
 a "working hypothesis"; thus, if the vibratory hypothesis regarding light  
 were proved to be false, still, because in the true explanation there would  
 be some cause in a similar fashion periodic, scientists may continue to use  
 that vibratory hypothesis.

a2. It must well order the known facts, i.e. leave none of them  
 without at least possible explanation.

a3. It must be capable of verification i.e. capable of being proved  
 or disproved.

a4. It must be simple and applicable to many cases: for nature is  
 ruled by simple and most universal laws.

b. All these conditions are required by the very nature of scientific  
 law, for the discovery whereof hypothesis prepares.

D. The transition FROM A HYPOTHESIS TO A LAW is made:

a. NEGATIVELY:

al. by demonstrating:

ala. that the hypothesis contradicts no fact;

alb. that the hypothesis contains no internal contradiction.

a2. But this is not sufficient, for:

a2a, this does not exclude that there be ANOTHER explanation of the  
 same facts;

a2b. or, in other words, this does not shew that the hypothesis in  
 question is the SOLE or NECESSARY explanation of the facts;

a2c. or, in other words again, from the false can follow the true 'per  
 accidens' (cf. n.248); that is, given this hypothesis, the known facts may  
 follow owing to some accidental circumstance (v.g. owing to the accidental  
 circumstance that the known facts are only some of the facts and not more):  
 in which case- the absence of contradiction with the facts is only 'per  
 accidens'. and not 'per se' or necessary.

b. POSITIVELY:

bl. by showing:

bla. that every OTHER explanation is excluded;

bib. or, in other words, by showing that the hypothesis in question is  
 the SOLE or NECESSARY explanation of the facts;

blc. or, in other words again, by showing that this absence of  
 contradiction:

bid. is not 'per accidens' (owing to some accidental circumstance),

blc2. but is 'per se' or necessary (independent of every accidental  
 circumstance).

b2. Which is done by means of the methods of induction which will be  
 dealt with below (n.485).

E. Nevertheless CAUTION must be exercised in the rejection of an  
 hypothesis:



r

- a. For an hypothesis is not to be rejected on the ground that it \* contradicts some truth, when it contradicts only opinions;
  - a1. Indeed almost all new hypothesis contradict opinions.
  - a2. Thus;
    - a2a. the Copernican hypothesis regarding the movement of the earth contradicted the system of Ptolemy;
    - a2b. Pasteur's hypothesis regarding the origin of living organisms contradicted the opinion of spontaneous generation.
- b. Indeed, as said above (C.alb), a false hypothesis, if it explains many facts, is only partially false:
  - b1. wherefore something in it is common with the true explanation;
  - b2. for which reason it can be useful for the discovery of this true explanation.

- P. Hypothesis is distinguished into;
  - a. YORPCING- HYPOTHESIS, insofar as its office is (as yet) only to direct investigations.
  - b. SCIENTIFIC HYPOTHESIS, insofar as its verification or proof is hoped for.

485. METHODS OF INDUCTION; The "methods of induction" are the methods whereby it is shown that the accord of an hypothesis with the facts is 'per se' or necessary, or, in other words, that the hypothesis in question is the true explanation of the facts, as being the sole and necessary explanation.

ARISTOTLE already spoke about this.

- a. Aristotle's teaching here-upon is thus explained by ST THOMAS:
  - a1. "From sense is derived a memory —
  - a2. "But from a memory effected many times about the same thing, yet in diverse singulars, is derived 'experimentum'] because 'experimentum' seems to be nothing else than to take something from many retained in memory.
  - a3. "But nevertheless 'experimentum' needs some reasoning about particulars, by which one is compared to another; which is proper to reason. For example, when such a one remembers that such a herb many times cured many of fever, there is said to be 'experimentum' that such herb is curative of fever.
  - a4. "But reason does not stop at the 'experimentum' of particulars; but from many particulars in which he has had experience, he takes one common, which is set firm in his mind, and he considers it without consideration, of any of the singulars; and this he takes as the principle.... ..of science." (In II Post. Anal, loc.20),
- b. Note regarding this text;
  - b1. that:
    - b1a. although it is concerned with the abstraction of universals, as is clear from the context,
    - b1b. and not about principles themselves,
    - b2. nevertheless it already sketches certain delineaments of induction.

- B. Now:
  - a. Sometimes for the discovery of a universal law, one or two observations suffice.
  - b. But in most cases many facts are to be examined; most often this more diligent observation, aided by experimentation, must be employed:
    - b1. simple observation indeed, if the fact does not depend on our dispositions (as in astronomy, meteorology, geology etc);
    - b2. but also experimentation, if the fact can be produced or provoked by us (as in physics and chemistry).

C. Certain RULES are laid down by modern authors for the passage from hypothesis to a universal law:

- a. FRANCIS BACON (Novum Organon, II, p.1620):

a1. Requires that three tables be drawn up, to wit:

ala. A table of positive instances (*tabula praesentiae*), wherein are to be noted down the cases in which the fact has been observed.

alb. table of negative instances (*tabula absentiae*), wherein are to be noted down the cases in which the fact is not found.

ale. ii table of degrees (*tabula comparativa*), wherein are to be noted down the variations of the fact in varied circumstances.

a2. But:

a2a. Bacon requires too much, since his demands fall little short of a (formally) complete induction (cf. nn.310-312).

a2b. For which reason Wundt rightly reproaches him. (Cf. Wundt: *Logik*, II, 1,20).

SIR JOHN KEILSQUILL (1792-1871) proposed certain rules in his work: 'Preliminary Discourse on the Study of Mathematical Philosophy', from which John Stewart Mill drew the 'methods' which have become famous under his name.

JOHN STUART MILL (A System of Logic; Bk.III, ch.8-9) proposes the celebrated five methods:

c1. EXPOSITION OF THESE METHODS;

cla. THE FIRST is the METHOD OF AGREEMENT;

cla1. which Mill thus formulates: "If two or more instances of the phenomenon under investigation have only one circumstance in common, the circumstance in which alone all the instances agree, is the cause (or effect) of the given phenomenon" (*System of Logic*, London, 1941, p.255).

cla2. Which is:

cla2a. thus formulated by Mill: "When observation shows that two events accompany one another (either simultaneously or in succession), it is probable that they are causally connected; and the probability increases with the number and variety of the instances." (*Text-book of Logic*, ch.9).

cla2b. and thus briefly stated by Joseph: "Nothing is the cause of a phenomenon in the absence of which it nevertheless occurs." (*Logic*, p.403).

cla3. Which is thus illustrated:

cla3a. By Mill: "For example, let the effect...be crystallization. We compare instances in which bodies are known to assume crystalline form, but which have no other point of agreement; and we find them to have one, and as far as we can observe, only one, antecedent in common: the deposition of a solid matter from a liquid state, either a state of fusion or of solution. We conclude therefore, that the solidification of a substance is an invariable antecedent of its crystallization." (op. cit. p.254).

cla3b. In other words, more briefly: In every case of crystallization, we find this one common antecedent, namely, transition from a liquid state to a solid state: therefore solidification is the cause of crystallization.

clb. THE SECOND is the METHOD OF DIFFERENCE;

clb1. Which Mill thus formulates; "If an instance in which the phenomenon under investigation occurs, and an instance in which it does not occur, have every circumstance in common save one, that one occurring only in the former. the circumstance in which alone the two instances differ, is the effect, or the cause, or an indispensable part of the cause, of the phenomenon." (Op. cit. p.256).

clb2. Which is:

clb2a. thus formulated by Mill: "When the addition of an agent is followed by the appearance, or its subtraction by the disappearance, of a certain event, other circumstances remaining the same, that agent is causally connected with the event." (Op.cit.)

clb2b. and thus briefly stated by Joseph; "Nothing is the cause of a phenomenon in the presence of which it nevertheless fails to occur." (Op.cit. p.404).

clb3. Which is thus illustrated;

clb3a. By Mill: "If a bird is taken from a cage, and instantly plunged into carbonic acid gas, the experimentalist may be fully assured (at all events after one or two repetitions) that no circumstance capable of causing suffocation had supervened in the interim, except the change from immersion in the atmosphere to immersion in carbonic acid gas." (Op.cit. p.256).

clb3b. In other words, more briefly: If an animal which lives in the air, soon dies when immersed in liquid, it may be concluded that air is the necessary cause of its life, and deprivation of air is the cause of its death.

clc. The Third method is the Method of Difference:

clc1. Which Mill thus formulates: "If two or more instances in which occurs have only one circumstance in common, while two or more instances in which it does not occur have nothing in common save the circumstance in which the effect or the cause, or an indispensable part of the cause, is present (Op. cit. p. 9)." <sup>1</sup>

clc2. In which later writers have distinguished two methods, to wit, the method of agreement and the joint method of difference and agreement:

clc2a. The is thus formulated by Mill: "Whatever is present in numerous observed instances of the presence of a phenomenon, and absent in numerous observed instances of its absence, is probably causally connected with the phenomenon. (Op. cit. p. 306).

clc2b. The joint method of difference and agreement is thus stated by Mill: "When one phenomenon has been shown to be the cause of another under given conditions, by the method of single difference; and when we fail to find or to construct any instance where the one phenomenon occurs without the other: then it is probable that the first is the unconditionally invariable antecedent of the second - i.e. that the latter can be produced in no other way than by the former; and the probability increases with the number and variety of the negative instances all agreeing in the absence both of the effect and its suspected cause. (Op. cit. p. 309).

clc3. Which is thus illustrated;

clc3a. By Mill: "It appears that the instances in which much dew is deposited, which are very various, agree in this, and, so far as we are able to observe, in this only, that they either radiate heat rapidly or conduct it slowly: (Qualities between which there is no other circumstance of agreement, than that by virtue of either, the body tends to lose heat more rapidly from its surface than it can be restored from within. The instances, on the contrary, in which no dew, or but a small quantity of it, is formed, and which are also extremely various, agree (as far as we can observe) in nothing except the fact of having this property. We seem therefore to have detected the characteristic difference between the substances on which dew is produced and those on which it is not produced." (Op. cit. pp. 273-274).

clc3b. By Bittle: "The guinea and feather\* experiment can be used to show the Joint Method. According to the laws of gravity all bodies should fall with an equal velocity; but a feather will be slower in reaching the ground than the coin. The hypothesis is formed that the resistance of the air upon the larger surface of the feather is the cause of its slowness. Placing both coin and feather in a tube filled with air, we observe that the fall of both is unequal in velocity; and this repeats itself as often as the experiment is made. So far we have the Method of Agreement. Next we exhaust the air from the tube, and now both reach the bottom at the same moment; this also happens as often as the experiment is repeated. And the same is true of other gases. In all these cases it is the presence of the air (or other gases) which causes the difference of velocity, and the only recognizable reason would appear to be the resistance exerted upon the larger surface of the feather. Hence by the Joint Method we conclude that the resistance of the gas is the cause of this phenomenon of the difference in velocity between the guinea and the feather." (Bittle: The Science of Correct Thinking, pp. 310-311).

old. THE FOURTH METHOD is the Method of Residues;

old1. Which Mill thus formulates: "Subduct from any phenomenon such part as is known by previous inductions to be the effect of certain antecedents, and the residue of the phenomenon is the effect of the remaining antecedents. (Op. cit. p. 2607).

old2. Which is:

old2a. thus formulated by Mill: "When any part of a complex phenomenon is still unexplained by the causes which have been assigned, a further cause for this remainder must be sought." (Op. cit. p. 315).

old2b. and thus briefly stated by Joseph: "Nothing is the cause of one phenomenon which is known to be the cause of a different phenomenon." (Op. cit. p. 404).

old3. Which is thus illustrated:

oldSa. By ^yons: "There cannot be a simpler case, than ascertaining the exact weight of any commodity in a cart; by weighing the cart and load, and then subtracting the tare or weight of the^ cart alone, which had been previously ascertained."\* (Elementary Lessons in Logic, p,252),'^

cld3b. By ^ill, quoting from Sir John Herschel; \*\*M.Arago, having suspended a magnetic needle by a silk thread, and set it in vibration, observed that it came much sooner to a state of rest when suspended over a plate of tVian when no such plate was beneath it. Now, in both cases, there were two \*verae causae\* (antecedents known to exist) why it should come at length to rest, vis. the resistance of the air, which opposes, and at length destroys, all motions performed in it; and the want of perfect mobility in t silk thread. But the effect of these causes being exactly known by t|x3 observation made in the absence (sf the copper, and being thus allowed for and subducted, a residual phenomenon appeared, in the fact that a retarding influence was exerted by the copper itself; and this fact, once ascertained, speedily led to the knowledge of an entirely new and unexpected class of relations.\*\* (Op, cit, p.280).

cle. TOE\_FIETH, lvBiTHOD is the METHOD OF roNGOMITANT VAgI^IQNS^!

del, ^^hich Mill thus formulates\* \*V/hatever phenomenon varies in any whenever another phenomenon varies in some particular\*manner, i^"bither that phenom^on, or is connected with it through some fact of causation.\* (\*Op, cit>

cle2. V/hich is:

cle2a, thus formulated by MeHone: "If two phenomena always vary together, other circumstances remaining the same or varying independently, there is probably-a causal connection between the tv/o phenomena."\* (Oo. cit. P-312),

cle2b. and thus briefly stated by Joseph; \*\*Nothing is the cause of a phenomenon which varies when it is constant, or is constant when it varies, or varies in no proportionate manner with it. † (Op. cit. p.404).

cle3. ^hich is thus illustrated by Mill;

cle5a. "w/en we find that all the variations in the position of the moon are follov/ed by corresponding variations in the time and place of high water, the place being alv/ays either the part of the earth which is nearest to, or that which is most remote from, the moon, we have ample evidence that the moon is, wholly or partially, the cause which determines the tides, # (Op. cit. p.262).

cle3b. That the oscillations of the pendulum ai\*e caused by the earth is proved by similar evidence. Those oscillations take place between equi-distant points on the two sides of a line, "vdiich, being perpendicular to the earth, varies with every variation in the earth\*s position, either in space or relatively to the object. Speaking accurately, we only know by the method now characterized that all terrestrial bodies tend to the earth, and not to some unknow/n fixed point l3^ing in the same direction. In every twenty-four hours, by the earth\*s rotation, the\* line drawn from the body at right angles to the earth coincides successively with all the radii of a circle, and in the course of six months the place of tliat circle varies by nearly two hundred of miles; yet in all these changes of the earth\*s position, the line in which bodies tend to fall continues to be directed towards it: which proves that terrestrial gravity is directed to the earth, and not, as was once fancied by some, to a fixed point of space." (ibid.).

## c2. CRITIQUE OF THESE METHODS:

c2a. These methods are of great practical value and the use of them by scientists has been attended with much success, Coffey; Logic, pp. 172-201).

c2b. Nevertheless:

c2bl. First:

c2bla. They do not suffice for Obtaining universal laws, unless they be completed by a metaphysical principle, namely: this constant nexus between phenomena is the SIG3^ of a necessity based in theT^NATURE of the things.

c2blb. In other words, these methods are of no avail for the discovery of a universal law unless the empiricism with ythlch they are vested in Mill, be excluded.

c2b2. Secondly:

c2b2a. These methods consider only this one thing, namely, causal neius\*.

c2b2'b. But:

c2b2b1. not all laws are causal laws;

c2b2b2. for there are other laws, to wit, descriptive laws (n.481), which are either qualitative or quantitative: v/hich are explained:

c2b2b2a. not by means of a causal nex<sup>7</sup>

c2b2b2b. but by necessity.

d. Therefore the process of WinUIT seems better:

d1. -fThich is thus formulated by 'jHidDT: (Logik, p.385);

d1a. "Amonja; the circumstances which accompany an event, those are essential conditions:

d1a1. "whereof the elimination removes the event itself,

d1a2. "and whereof the gixantitative -chan/'ie produces a quantitative chanp:c of the event.

d1b. "This rule indicates two expedimental methods, which we may call briefly the methods:

d1b1. "of elimination.

d1b2. "and of gradation."

d2. V/undt:

d2a. although:

d2a1. he neither arrives at a true notion of metaphysics,

d2a2. nor remains v/ith positivism in mere experience,

d2b. nevertheless:

d2b1. remaining attached, along with Kant, to phenomenalism and empiricism - albeit with moderation - ,

d2b2. in his inductive process he perhaps pays too little heed to qualitative changes.

d3. Hov/ever "7/undt approaches more to the truth taught by the scholas-  
tics;

d3a. "indeed, further, his process is the very inductive process of the scholastics more experimentally proposed.

d3b. "But philosophically the same is said: the removal or quantitative change of an event is obtained for this reason, that formally and necessarily there is a certain nexus between the event and the circumstances:

d3b1. "as between cause and effects,

d3b2. "or between a nature and its operation." (Pirota: Summa Philos. p.133).

486. **SOME SGIEI/TIPIC LAY/S ARE DEDBCBD:** Besides the laws obtained by induction, many scientific laws are obtained from other laws by deduction. (Cf, nn.378, 482).

A. Prom more universal laws other more particular laws are deduced.

B. Other laws ai'e deduced from a combination of several laws determined by induction.

### DISSERTATION THREE.

### SCIENTIPIC CONCLUSIONS.

487. **SCIMCE MUST DEDUCE CONCLUSIONS;** Given that the laws which are the principles of the sciences have been determi.ned, science must from them, deduce conclusions, - which contribute much to the progr'ess of science.

488. **W/S OBTAINED BY DEDUCTION ARE CONAuSIONS;** In those laws which are obtained by deduction from other laws (cf. n.486), we have already some scientific conclusions.

489. **USE OF CONCLUSIONS GOT BY DEDUCTION TO VERIFY.** But further: ' '

A. By means of deduction:

- a. are determined applications of laws, or of hypotheses,
- b. which applications:
  - b1. if they are experimentally verified,
  - b2. constitute verifications of the laws or hypotheses.

B. Thus:

^be hypothesis of Torricelli about atmospheric pressure  
 an^^^ asce^nasion of water in ele^va^or^ deduced that ~a liquid of jrea^r  
 density and on the summit of a moountain ought to ascend less,

b. And:

- b1. these applications made by Pascal being later proved from facts,
- b2. the hypothesis of Torricelli was verified.

490. **USE OF DEDUCTION^TO** LAYS, AND TO PERFECT THE **EDGE**  
**OP THE^J;** Likewise facts already known, or laws already proved, are  
 explained, or the knowledge of them perfected, by deduction.

A. As regards PACTS indeed; For facts are explained:

- a. not only by the discovery of laws,
- b. but also by deduction, whereby is ^iGfwn their connexion with a law  
 already known.

B. But as regards LAV/S:

- a. For laws already determined by induction, may be confiroied;
  - a1. if later they are deduced from known laws.
  - a2. "Thus\*\* y/rites Taine, ^\*it is a law tliat reduction of temperature  
 produces dew. One may also establish this lav/ deductively from the laws of  
 Dalton on water-vapour diffused in the air. Dalton proved that the quantity  
 of water which can remain diffused in the air in the state of vapour is  
 limited for each degree of temperature and that the maximum is lower in  
 proportion as the temperature is lower. From this it fellows deductively  
 that, if there is in the air as much water as the present temperature allows  
 it to contain, every lcv/ering of temperature will lead to the condensation of  
 a portion of the water-vapour. On the other hand, from the knov/n laws of  
 heat, it follows deductively that the contact of the air v/ith a cold body  
 lowers the temperature of the surrounding layer' of air, and consequently  
 forces it to relinquish part of the water vchic it contains. Finally, from  
 the ordinary laws of gravitation and cohesion, it follows deductively that  
 this water attaches itself to the sijrface cf bodies: which is what constitutes  
**dew.**

b. More indeed, from this deduction laws are explained:

- b1. for before they are deduced:
  - bla. their truth indeed is established by virtue cf the induction  
 whereby they are gathered from facts,
  - bib. v/ithout inducti'^n however explaining them.
- b2. This explanation of them pertains to deduction.

491. **DISCOVERY OF EE;/ FACTS BY DEDUCTION:** New facts are discovered by means  
 of deduction. Thus did Galle (in 1846) discover the new planet, Neptune,  
 Dy means of mathematical deduction from the hypothesis formed by Leverrier  
 regarding the ce.usc cf the disturbance in the movements of Uranus: for  
 Leverrier hypothetically explained these disturbances from the attraction of  
 some unknown planet. From this hypothesis Galle by mathematical deduction  
 discovered the mass, movement and position of this planet.

## •ARTICLE THREE.

## SCIENTIFIC THEORIES.

492. NOTION OF SCIENTIFIC THEORIES: It is to be observed that:

- A. The sciences of nature:
  - a. not only:
    - a1. determine laws (cf. nn.482-436, 488);
    - a2. and explain laws (cf. n.490),
    - a3. and institute applications of laws whereby laws are verified (cf. n.489);
  - b. but also endeavour to coordinate or unify or systematize diverse laws.

- B. But:
  - a. just as for the determination of laws it makes frequent use of particular hypotheses,
  - b. so also TO ORDER LAWS IT IS OBLIGED TO MAKE USE OF MORE GENERAL HYPOTHESES.
- ^1. WHICH ARE CALLED THEORIES.
  - b2. Such are, for example:
    - b2a. the atomic theory,
    - b2b. the reticular theory of crystals,
    - b2c. the kinetic theory of phases.

493. VALUE OF THESE THEORIES: Hence arises a difficult question: What value have these theories?

A. First indeed, we must consider WHAT OPINION IS HELD BY SCIENTIFIC THEORISTS THEMSELVES. who have professedly treated this question; (cf. Rey, *La theorie de la Physique chez les physiciens contemporains*):

- a. In modern times, until the middle of the nineteenth century:
  - a1. nearly all scientists admitted the scientific theories:
    - aa. "not only have a truly explicative value,
    - alb. "but attain and represent almost the whole reality of inorganic bodies;
  - a2. "after that time, there were some who remained in that persuasion." (Lioenen: *Acta primi congressus thomistici*, p.62).
  - a3. However, Duhem seems to admit many exceptions, when, after discussing this question (*La theorie physique*, pp.54-76), he concludes: "If therefore some very great physicists were able to feel pride in the powerful method which they employed, to the point of exaggerating its reach, if they were capable of believing that their theories uncovered the metaphysical nature of things, many inventors who capture our admiration were more modest and more clear-sighted; they recognized that a physical theory was not an explanation; they saw in it a simplified and ordered representation which grouped laws according to a classification more and more perfect, more and more natural." (*ibid.* p.76).

b. After the middle of the nineteenth century, scientists greatly restricted the explicative value of theories:

- bl. "According to Mach, the value of a theory lies in this-, that it spares our intellect too numerous efforts (efforts which, without the help of a theory, would be too numerous): in other words, it 'effects an economy of the intellect'.
- b2. "According to Poincare, a theory:
  - b2a. "is not true or false,
  - b2b. "but convenient.
- b3. "According to Duhem:
  - b3a. "it not only brings with it an economy of intellect,
  - b3b. "but, if it is good and universal, leads to a classification of facts and laws, which he calls natural." (Lioenen; *op.cit.* p.63).
- b4. As is clear, these authors greatly restrict the value of theories,
  - b4a. without however expressly denying to them all explicative value in attaining reality it is 'If,

as many disciples

jtiieaa.jswicjiiasjia-ja^

c. TODAY 3CiaitiiS,s setafn to hold an interntedlary poosition:

cl. For they i\*ecogni2e that a theory:

cla. does not attain the essence of the real (cf. l^eyerson; Le. phys^icion

@ii Xc

clb. hut is a aywibol of the real. (Cf. Bddinjgton; Tho Mature 'of the Physical World; The Philosophy of Modem ScieiKse).

c2a. Meyeraon writes: "The scientist of to-day cannot indicate--tte esf--:nce"of~"5Sl^l. It is this that prinsirily distinguishes his attitude frera^that of his materialist predecessor and, even more, from that of the roeJiaevnl plysicist: he does not even claim to attain to the he-ng of. tte l'oal, which, on the contrary, he sees as enveloped in profound mystery.'\* (Lc! Playaicion et le reel, Le Mois, ;}uin 1931).

cSh. And Eddington writes:

c2bl. "We have suffered, and v?e still siiffer, from expectations that electrons and cjuanta must' "be in some fundamental respects like materials or forces frjrc.liar in the works'l'ioP - that all we have to do is to imagine the us'-ax kind of thing on an infinitely analler scale. It ^st he our aim to avoid such prejudg^nants whloh are suoely illogical; and since we must cease to employ faadliar concepts, symbols have become the only possible alternative .....If, then, only pointer readings or their equivalents are put into the machine of so5.entific calculation, how can v«s grind out anything but pointer readings.....V/henever 'we state the properties of a body in terms of physical quantities v,'o are iinpai'ting knowledge as to tho response cf various metrical indicators tc its presence and nothing more. After all, knowledge of this kind is fairly ccmpr.ehensivo. A knowledge of the response of ^1 kinds of objects - v/eighing-machines and '''-thor indicators - v/ould deteraine completely its relation to its environment, leaving only its un-get-atable nature undetermined.The Tictcrian phys-iciat felt that he knew just what he was talking about when he used such terns as matter and atoms. Atoms were tiny billiard balls, a crisp statement that was supposed tc tell you all about theis n&tiu'c.....But new v/c realise that science has nothing to say as tc the ii.trxnsic nature of the atvorru It is, like everything else in physics, a schfjduic of pr,inter readings..Scientific investigation does net lead to knoi>'ic-lgu cf the intrinsic- nature of **things**.,Hie external world of physi has thus beceme a w'cx'ld of shadows." (Tho i'fature of the Physical World, pp»249, 252, 25?, 259, 303, and XI'D).

c2b2. "S-onieth5.ng unknow/n is doing we don't know what - that is what cur theory amounts tc. There is the" same indefiniteness as to the nat^ of the activity and of v/hat it is that is acting. And yet fi\*om so unpromisiBg a beginning we really do get some'isixsre. We bring into order a host cf apparentl. unrelated phenomena; we malce prediptions and our predictions come off. The reason - the solo reason - for this progress is that our descript~ ion is n-t limited to unknown agents executing unknowm activities, but saakasa arc scattered freely in the dnscriptions. To contismplate electrons circulating in the atom carries us no further, but by contemplating eight circulating electio-ms in one atom and seven circulating electrons in another we begin to realise the difference between oxygen and nitrogen. Out •'f the ntmbers prceeds the harmony of natural law v-hlch it is the aim of science to disclose. We can grasp the tune but not the player." (Ibid. pp.291-292).

This last opinion, px'ovided it is rightly understood, isjLhjS ' acceptable opinion»

a« HIS PIK3T OPINION (i.e. the opinion conafion beforb the middle of the ninctee.Tith century) exaggerates the value of theories, not maintaining the specific distinction between tho sciences of natisie and tho philosophy of nature. (Cf. n.412).

al. For the truth is that natural science does not know essences in theiflselvec:

ala. for the sciences of natire are directly concerned:

alal. v/ith obsarv&ble reality.

aXaf: not with ontQlo^:ical reality;

alb, therefore they do riot know essences save tthrough emplriological



a2. But according to the FIRST opinion;

a2a. theories attain<sup>^</sup> beyond the observable, "almost the whole reality of inorganic bodies", as said above (A.a).

a2b. Nor is this surprising, if it be considered that this is an opinion either of materialists or of physicists after the manner Of the physicists of the Middle Ages.

a2b1. For MATERIALISTS cannot distinguish an empiriological order from an ontological (intelligible) order:

a2b1a. and therefore, when they admit that theories have real value, they must teach that they attain and represent the iflhole of the real, to wit, observable reality:

a2b1a1. as if the heart of things vwere directly observable.

a2b1a2. 'Which clearly is false.

a2b2. THE HiYSICISfS OF~^ MIDDLE AGES:

a2b2a. since they did not distinguish betv/een:

a2b2a1. that Physics vAiih is experimental or positive science,

a2b2a2. and that Physics which is a part of natural philosophy,

a2b2b. could not maintain the real value of theories without attributing to them the ability to attain the essences of things in themselves.

a2b2c. 'Which is likewise to be rejected.

b. But THE SECOND OPHTION (i.e. the opinion which was in vogue fi'ora the middle of the nineteenth century until recently), at least as it is found in the disciples who seem to exaggerate the mind of those m.asters (such as Maoh, Poincare' and Duhem) in the direction of restricting the value of theories to the point of denying to theories all real value, is likewise to be rejected.

b1. For this opinion supposes that the human intellect has not as its proper formal object the essences of sensible things.

b1a. For this opinion suffers from the vice of Pragmatism and Nominalism:

b1a1. from which vice even those masters themselves:

b1a2. were not completely free,

b1b. although they spoke much more cautiously than their disciples.

b2. But IN REALITY:

b2a. a formal distinction being admitted between:

b2a1. the empiriological explanation of science,

b2a2. and the ontological explanation of natural philosophy,

b2b. it must be said that:

b2b1. whereas natural philosophy attains essences directly and in their ontological properties,

b2b2. natural science attains essences indirectly and obliquely, in. their observable external signs only.

c. THEREFORE "THEN SCIENTIFIC THEORISTS OF TODAY TEACH. IN ACCORDANCE WITH THE LAST OPINION (cf. A.c):

c1. That:

c1a. theories do not attain the essence of the.real;

c1b. this is true, provided what they say be understood of knowledge of the essence of the ontological reality in itself.

c2. That:

c2a.. theories are symbols of reality;

c2b. this also is true, provided the value of these symbols be duly determined.

c2b1. They must not be understood as if they were pure syriibols without any foundation in the real: for this understanding would reduce this third opinion to the second opinion.

c2b2. But neither, on the contrary, is it enough to say that theories analogically represent physical reality, as Hoenen says (op.cit. pp.61-74), without any further determination of this term 'analogically'.

c3. It is indeed true that physico-mathematical theories analogically represent reality: but the analog whereof it is question is to be determined.

c3a. It is not analogy of proper proportionality (cf. 153.H):

c3a1. for this would mean that we know these essences:

c3al.a. not indeed in themselves.

c3all\*. yet nevertheless 'ontologically' (i. e. non-empirilogically) ;  
which is impossible, as said above.

c3a2. And therefore theories are rightly said to represent reality  
symbolically, or, in other words, according to metaphoric analogy (cf. n.153,H).

c3a3. Therefore these theories are mental beings (entia rationis).

c3b. But insofar as a theory does genuinely represent obliquely the  
'ontological' reality:

c3bf. it must be assimilated to this reality,

c3b2. and therefore it is mental being with foundation in the real  
(i.e. based mental being; cf. nn.109-112).

c3c. But as regards the 'empirilogical' facts which a theory represents,  
insofar as they are measurable:

c3ci. the assimilation is univocal,

c3c2. and under this aspect a physico-mathematical theory has the value  
of real being;

c3c3. which is the foundation of the mental being.

c4. But the empirio-schematic theories of the biological and psychological  
sciences, which theories are not yet mathematized:

c4a. are not, as are physico-mathematical theories, combinations of real  
beings and mental beings;

c4b. but are real beings which univocally represent:

c4bl. directly empirilogical reality,

c4b2. and indirectly ontological reality.

1

#### SCHOLASTIC SUM.

494. SCHOLASTIC SYNOPSIS: The contents of the fore-going chapter may be  
thus schematically summarized:-

The empiricist and positiv-  
ist conception.  
The idealist conception.

v/rong  
conceptions

In itself

Right conception: that of moderate  
realism..

Their  
nature

vulgar fact,

relatively to

philosophic fact.

On  
SCIENTIFIC  
FACTS:

by ohservation.

by experience

Their  
determination

by experimentation»

by deduction.

On the  
sciences  
of  
nature:

Nature of scientific law.

Hypotheses.

On the  
discovery  
of than:

Two  
manners  
of dis-  
covery :

Induction,  
whose  
preparation  
is made by

Of Bacon  
Methods and Mill.  
of  
inductioii  
Of Wundt.

On the  
deter-  
mination  
of them:

Deduction.

On the proving of them: They are verified by deduction.

On  
their  
LAWS:

Their nature.

On the  
co-ordination  
of them, or  
on theories;

They express the essence of the real.

Their  
value:

Yet  
not  
in  
itself,  
but

In em-  
piriological  
signs:

Thus the theories  
of the biological  
sciences,

^Which are therefore  
real beings.

Thus physico-  
mathematical theories,

In  
sjraibols: Which therefore are  
mental beings based  
in the real.

aiAl'TER PORTY-OTO.

# MORAL SCIENCE.

495. **ORDEli** OP PROCEDURE: This treatment of moral science will consider two questions;

A. To wit:

a. **First.** whether in the present state of men merely philosophical natural science is true practical science.

Secondly, v/hether in the present state of i^jen, there is philosophical moral science.

B. Hence the following order:-

Wliether now moral philosophy is true practical **science.....Article** one.

On moral science;

'jyhether now there is philosophical moral science....**Article** two.

## ARTICLE OME.

Y/HETHER NOW MORAL riilLOSOPirY IS TRUE PRACTICAL SCIENCE.

496. **CONCLUSION:** Here:

A. **It is** question;

a. of practical science (cf. nn.396-401),

h. not of speculative science about operables (of. n.399).

B. And the conclusion is **this:** IN THE PRESSTT STATE OF im, MERELY PHILOSOPHICAL MORAI> SCIHICE CAimOT CONSTITITTE TRUE PPACTICAL SCIB^CE.

497. **PROOF** CF THIS CONCLUSION: Moral science:

A. **Is true practical science**, inasmuch as it is concerned:

a. not about good things,

b. but about good use of liberty by the operant.

B. Therefore moral science which is true practical science can abstract:

a. Neither from the ultimate end of man's life, which in the present state of men is a supernatural end;

b. Nor from the concrete conditions in which man now exists.

C. Therefore a merely philosophical moral science:

a. which:

a1. has regard only to a natural ultimate end,

a2. and considers another state of existence, to v/it, the state of

pure nature,

b. cannot constitute:

b1. true practical science,

b2. but only a specu].ative science about operables.

498. **THIS DOES NOT EXCLUDE THE POSSIBILITY OF METMiY PHILOSOPHIC MORItAL SCIENCE;** However, the above conclusion standing:

A. It does not follow that a merely philosophical moral science has no place in the present state of men.

3. But this merely philosophical moral science, or natural ethics, is not to be rejected provided:

a. it be not considered:

a1. either "as constituted IN THE DEGREE OF TRUE PRACTICAL SCIENCE.

a2. or as independent of the moral science which orders human acts relative to their supernatural ultimate end

b. but be considered only as a certain part essentially incomplete of true practical science. (Maritain: *La philosophie chrétienne*, pp. 102-108; *Science et Sagesse*, pp. 268, 278-33).

#### ARTICLE TWO.

WHETHER NOW THERE IS PHILOSOPHICAL MORAL SCIENCE.

499. OPINIONS: This is a much disputed question, even among Thomists.

A. Some, such as Deman (*Revue des Sciences Philos.*, 1934, pp. 258-290), and Ramirez (*Bulletin Thomiste*, avril-Juin, 1935), deny this thesis, to wit, THAT THERE EXISTS IN THE PRESENT STATE OF MEN. A MORAL SCIENCE CONSTITUTED IN ITS OWN RIGHT AS A SCIENCE. SPECIFICALLY DISTINCT FROM MORAL THEOLOGY, PROVIDED THIS MORAL SCIENCE BE CONSIDERED AS SUBALTERNATE TO SACRED THEOLOGY. (Of. n. 425).

3. But others, on the contrary, such as Maritain (*De la Philosophie Chrétienne*; *Science et Sagesse*) affirm this thesis, and rightly so.

500. PROOF OF THIS THESIS: This thesis is to be maintained, and the proof of it is reduced to the following:

A. ARGUMENT;

a. It remains to natural wisdom, in the present state of men, to treat of those things whereof theological wisdom cannot treat.

b. But natural wisdom cannot treat of the HUMAN OPERABLE (POSSIBLE) as human.

c. Therefore besides theology, there is to be admitted a certain moral philosophy, which however, on account of what has been said above (nn. 496-497), is subordinated to sacred theology.

3. If this argument:

a. - The MAJOR is evident--from this:

a1. that grace does not destroy, but perfects, nature.

a2. But something natural would be destroyed, if, on account of the elevation of human nature to a supernatural end, something about which sacred theology cannot treat, were prohibited to natural wisdom.

b. The MINOR is proved from the diverse formal objects (formal reasons whereunder; cf. nn. 403-406) both of sacred theology and of moral philosophy.

b1. For the formal reason whereunder sacred theology proceeds is the light of divine revelation; for everything which sacred theology considers is considered by it inasmuch as it is divinely revealable.

b2. But the formal reason whereunder moral philosophy proceeds is the orderability of human actions by practical reason.

1. IT BE OBJECTED;

c1. That, on account of the elevation of practical reason by the light of divine revelation, the formal reason whereunder of natural moral science (ethics) is identified with the formal reason whereunder of sacred theology.

c2. THE ANSWER IS that there is a twofold elevation of reason by the light of divine revelation:

c2a. The one;

c2a1. is such that human reason becomes an instrumental cause ('instrumental\* in the strict sense) of the divine light;

c2a2. and this is the elevation of reason as it is found in sacred theology.

c2b. But the other is such that human reason remains a principal cause, although dependent on a higher cause.

c2b1. For it is to be borne in mind that "many causes operate some effects beyond their own power through power participated from another, and yet they are principal causes;

c2b1a. "just as it is clear that heated water and heated iron produce heat, and the moon, being illuminated, produces light, in participating it from the sun, and yet they are principal causes, because the effects, which they produce univocally, are assimilated to the power received, whereby they produce them, viz. to heat and to light.

c2b1b. "Similarly a vital power, as an intellect illuminated by the light of glory, or of grace, produces supernatural acts, which exceed its own proper power, and yet produces them as a principal cause:

c2b1b1. "both because those acts do not exceed the superadded power, wherefrom they proceed, being supernatural, like the power itself, and they only differ as initial act and terminal act: which does not suffice for the character of instrument; otherwise to all natural acts, a power and habit would have themselves instrumentally.

c2b1b2. "And also, because those acts are vital; therefore they proceed from a principle moving itself, therefore not merely instrumentally moved and subserving another, but as from a principal cause. For, that which moves itself, by this very fact moves and operates from power which it has in itself; and does not minister to another, but to itself, and does not wait to be moved by another, but begins from itself, because it moves itself. But these are the conditions of a principal cause, to wit, that it be a cause from which movement begins primarily and necessarily, and which does not subserve and minister to another, but to itself." (John of St. Thomas: *Cursus Phil.* t.II, Reiser, p.515 b; *Cursus Theol.*, t. VII, disp. 2, a.1, n. 23; cf. Maritain: *Science et Sagesse*, pp. -Jlss:)

c2b2. Therefore:

c2b2a. Besides the former elevation of practical reason which pertains to sacred theology,

c2b2b. there must remain the latter elevation under the light of revelation: for otherwise the exercise of principal causality, which practical reason would have in man existing in the state of pure nature, would:

c2b2b1. far from being perfected,

c2b2b2. be destroyed.

c2b2c. Which elevation remaining:

c2b2c1; there remains:

c2b2c1a, distinct from the formal reason whereunder of sacred theology^

c2b2c1b; the formal character whereunder of moral philosophy:

c2b2c2. yet more perfect from the elevation of practical reason by the light of divine revelation, that is, from the subalternation of this moral philosophy to sacred theology.

501. FORMAL OBJECT WHICH OF MORAL PHILOSOPHY SUBALTERNATE TO THEOLOGY: It FOLLOWS FROM WHAT HAS BEEN SAID:

A. That moral philosophy subalternate to sacred theology has as its formal object which (or formal character which) human acts ordered indeed:

a. ULTIMATELY to the supernatural and eternal end,

b. but PROXIMATELY to temporal ends, and to temporal works, el- indeed, not abolished, from their ordination to the supernatural ultimate end.

B. For:

- a1. not from their ultimate end,
- a2. but from their "PROXIMATE E-TD". as John of St Thomas says (Cursus Theol., t.VI<sup>^</sup> disp.16, a.\*7, n.30).
- b. But from the elevation of man to a supernatural end:
  - b1. temporal ends remain nevertheless:
    - bla. non-ultimate ends,
    - bib. and are not pure means;
    - b2. (for:
      - b2a. the specification of a means is from the end,
      - b2b. but a non-ultimate end is specified from itself, yet from itself as subordinated to the ultimate end).

C. This formal object vAich of moral philosophy distinct from the foiTTiai object Y/hich of sacred theology is already touched by BANIE when he writes:'

- a. "To moral philosophy it properly and directly pertains to define questions of right and justice insofar as man is ordered to political inte?"cpurse and a natural end.
- b, '^'"But to sacred theology it in the highest way pertains to scrutinize about rigtit even down to the smallest details with respect to spiritual good and surernatural end. And after this manner, sacred theology, since it is practical, at least eminently considers all things which the moral philosoph.er considers, with much greater altitude and much more divinely than he." (Bannez: De lure et Iustitia, Prooenum).

D. rT THOVIAS analogically touches the same when speaking of superior and inferior reason, and of the acquired and infused virtues:

- a. Ythoro he is speaking:
  - a1. cf superior and inferior reason:
    - ala. ' Inferior reason takes counsel, tending to election, from reasons, 01 temporal things, as that something is superfluous or falling siriort, useful or fitting, and so of other conditions which the moral philosopher trept.ts;
    - a1b. "but superior reason takes counsel from eternal and divine reasons, as because it.is against the precept of Qod or engenders an offence of him, or something of this kind." (in II Sent, .disp.24, q.2, a.2).
    - a2. "?or example, synderesis proposes this: every evil is to be avoided;
    - a2a. "superior reason assumes this: adultery is evil, because prohibited by the lav of God;
    - a2b. "or inferior would assume this, that it is evil, because unjust, or unfitting." (Ibid. a.4).
  - b. v/here he is speaking of the acquired and infused virtues:
    - b1. "The acquired virtues, of which the philosophers have spoken, are ordered only to perfect men in civil life —
    - b2. "The civil good:
      - b2a. "is not the ultimate end of the infused cardinal virtues....
      - b2b. "but of the acquired virtues, of which the philosophers have spoken." (QQ. Disp., De Virt. Card., a.1, c. et ad 3).

502. CONCLUSION: Therefore the conclusion must be that:

A. JUST AS human acts are referred in two ways (and in these ways, either implicitly or explicitly) :

a. In the spiritual (supomatural) line, by means of the infused virtues, directly to the good of eternal life and of the supernatural ultimate end;

- In the temporal line, by means of the natural virtues elevated by ..'cried virtues;
- b1, direct!ij'\_ to the good of civil life,
- b2. Sid indirectly to the supernatural ultimate end.

B. SO h \*inan acts:

a. In the spiritual (supernatural) line, through sacred theology, are directly ordered to the good of eternal life and of the supernatural ultimate end, rnd'er the light of revelation, using reason as a merely instrim'ent.^ c.^ise

- b. In the temporal line, through moral philosophy, subalternate to sacred theology:
  - directly to the good of civil life, under the light of reason as a principal agent, yet elevated by the light of theology (the light of revelation).
- b2. vriiereby they are indirectly referred to the supernatural ultimate end.

SCHBiATIC SUMMARY.

503. SCHEMATIC SYTIOPSIS: The contents of the fore-going chapter may be thus schematically summarized

INDEPENDENT or merely philosophical	Is not had in the present state of men in the grade of true practical science.		
	Yet is had, as an incomplete part of true practical science.		
Philosophical moral science	NOT so however that it would become a PART of sacred theology.		
SUBALTERNATB TO SACRED THEOIOCTYT is had	ULTIMATELY indeed from the supernatural end.		
	But remaining SPECIFICALLY distinct from it, inasmuch as it is specified	But BOFFIDIATELY from a temporal 4'n3 whicR it con-siders	NOT directly under the liSbl-- 9.t  Not as an in-strument of the li^t of revelation.  BUT dii'ectly under the light of practical reason: But as a principal pause under the elevation of supernat-ural revela-tion.

CHAPTER PORTY-TfiREB.

SOCIOLOGY.

504. ORDER OP PROCEDURE: This treatment of sociology:
- A. Will consider:
    - a. First, the object of sociology.
    - b. Secondly, the nature of sociology.



B. Hence the following order:-

On sociology	Its object.	Article one.
	Its nature.	Article two.

#### ARTICLE One.

#### OBJECT OF SOCIOLOGY.

505. NOTION OF SOCIOLOGY: All admit that sociology is:

A. The science of social facts;

B. Or the SCIENCE WHICH IS CONCERNED ABOUT FACTS WHICH RESULT FROM THE COLLECTIVE LIFE OF MANKIND.

506. Nature of social facts: But it must now be determined which is the nature of social facts:

A. According to DURKHEIM, LEWIS-BRUHL and generally the 'SOCIOLOGICAL SCHOOL', a social fact arises from the collective soul of society, which is diverse from the individuals who constitute society. Therefore a social fact is:

a. Not material save in regard to expression, but spiritual (psychic).

b1. and therefore is diverse from an individual psychic fact.

"Thus:

Now Durkheim writes: "In binding themselves together, in penetrating each other, entering into fusion, individual souls give birth to a psychic being, if one wishes so to call it, but which constitutes a psychic individuality of a new kind." (Regies de la methode Sociologique, p.127).

b2b. Though Tarde (1843-1904) contradicts Durkheim, teaching that a social fact is an inter-individual psychological fact proceeding from imitation.

c\* Extrinsic to individual consciousnesses:

c1. since it proceeds from the collective consciousness,

c2. which is extrinsic to individual consciousnesses.

\*3- Coercive: whereby are explained:

d1. both the social necessities of life,

d2. and the rules of law (juridic rules).

B. This notion of social fact proceeds from an erroneous doctrine regarding the nature of society: according to Durkheim, society is a real being beyond the individuals, (although Durkheim often affirms the contrary).

a. But IN REALITY IT IS TO BE SAID, along with St Thomas, that society, beyond men, is only mental being.

alTPor it is a union of men for the doing or obtaining of something common.

a2. Therefore society has reality, from this, that the men who constitute it, tend together for a common end or for a common good.

b. Therefore a social fact:

b1. diverse indeed from an individual fact, is:

bla. not psychic.

bib. but moral.

b2. For it arises from the free activity of men for the procuring of a common good.

c. Nor ought it be called collective;  
 c1. as if it proceeded from a collective consciousness, distinct from the consciousness of individuals,  
 c2. but inasmuch as it arises from the free action of men ordered towards a common good.

d. And:  
 d1. therefore:  
 d1a. neither is it extrinsic to individual consciousnesses:  
 d1h. nor therefore is it imposing obligations merely from without,  
 d2. but:  
 d2a. it is imposing moral obligations arising from the consideration of the exigencies of a good common from within,  
 d2h. to which exigencies the coercive power of society is subordinate.

C. From what has been said, it already appears in what a social fact differs from psychic, historical, and biological facts.

a. It differs from psychic facts indeed, inasmuch as it is a moral fact;

al. It is true indeed:  
 ala. that not every psychic fact abstracts from freedom,  
 alb. but even when it is question of the exercise of freedom:  
 alh1. in one way is such exercise considered by the psychologist, who considers in it its manner of proceeding,  
 alh2. but in another way is it considered by the moralist, who judges of it according to the rule of morals. (Cf. Yves Simon: Critique de la connaissance morale, p.138, note 1).

a2. Durkheim also:  
 a2a. distinguishes a social fact from a psychic fact,  
 a2a1. insofar as the social fact proceeds from the collective consciousness,  
 a2a2. whereas the psychic fact proceeds from an individual consciousness.  
 a2h. But this distinction does not avail, unless his doctrine about society be admitted.

b. It differs from historical facts:

hi. Materially indeed historical facts and social facts are the same.  
 b2. But formally they differ;  
 b2a. For the same fact is diversely considered by a sociologist and by an historian:  
 b2a1. For the sociologist operates a certain abstraction about it in order to obtain universal conclusions;  
 b2a2. whereas the historian considers the singular fact with its circumstances of time and place.  
 b2b. Thus:  
 b2b1. The assassination of Julius Caesar by Brutus is an historical fact; but the assassination of him for political reasons is a social fact.  
 b2b2. The isolation of Napoleon at St Helena is an historical fact; but his exile thither for political reasons is a social fact.

c. It differs from biological facts;

c1. For:  
 c1a. biological facts are physical, and subjected to determinism:  
 c1b. but social facts are moral, and free.  
 c2. Nevertheless there is a certain analogy between them:  
 c2a. For both rise from an organism:  
 c2a1. biological facts indeed from a physical organism,  
 c2a2. but social facts from a moral organism.  
 c2b. But Herbert Spencer greatly exaggerates this analogy, retaining on account of his empiricism, scarcely any difference between these two organisms. "

ARTICLE T<sup>ra</sup>.

## NATURE OF SOCIOLOGY.

507. DURKHEIM'S CONCEPTION OF SOCIOLOGY AS A SPECULATIVE AND 'POSITIVE' SCIENCE: According to Durkheim:

A. Sociology is:

a. an experimental SPECULATIVE science after the manner of experimental psychology or experimental physics.

b. Therefore to this science normative moral science ought to give place.

B. It is readily to be admitted that Durkheim proceeds logically:

a. Admitting indeed no moral obligation beyond social coactions, there is no longer any room for him to admit normative science.

b. And paying no attention to freedom, and therefore to the moral nature of a social fact, he must consider sociology after the manner of the "positive" sciences.

508. CONTROVERSY AMONG SCHOLASTIC PHILOSOPHERS: But even among scholastic philosophers, it is disputed whether sociology is speculative or practical science.

A. All indeed admit that sociology cannot be substituted for normative, or practical, social philosophy.

B. But there are some, such as Delos (L'objet de la Sociologie, in Comment juger la sociologie contemporaine; Précis de Sociologie, Introd.), who think that:

a. besides moral philosophy,

b. sociology is a speculative science "autonomous" from philosophy (cf. n.421).

C. Yet others; such as Yves Simon, Lallemand, and Maritain, are of contradictory opinion, asserting that sociology:

a. is only a science connected with moral philosophy,

b. and therefore belongs to the genus of PRACTICAL sciences.

50... — — This last opinion alone seems acceptable:

A. For the object of sociology:

a. is social fact,

b. which, as said above (n.506), is moral fact; and as moral:

b1. cannot abstract from the end wherefrom it is necessarily specified,

b2. and therefore cannot perfectly abstract from normative judgments.

B. For which reason even experimental science cannot be concerned about such a fact in abstracting perfectly from every normative judgment:

a. and therefore cannot constitute speculative science;

b. for such an experimental science, if it is possible, belongs to the GENUS OF NORMATIVE SCIENCE

C. But the question whether such experimental sciences are possible, is to be answered BY DISTINGUISHMENT:

a. If the disciplines which, as present-day sociology, are concerned about moral facts, be taken as separate from all teleological consideration, even the most remote, and from all normative judgment, even implicit, they are not sciences save in an utterly improper sense, inasmuch as they use scientific and critical methods for the study of facts:

a1. They only furnish the matter of experimental information, a matter:

a1a. preparatory to normative science,

a1b. and very useful,

a1c. in which moral science will find the matter of philosophic facts

(cf. n.475).

a2. And therefore sociology cannot independently of normative moral science constitute an autonomous speculative science.

h. On the contrary sociology continued hv moral philosophy (cf. nn.432-433):

- hi. is true science,
- h2. yet annexed to moral philosophy.

c. Indeed, even further: whether it be taken in the first way as a simple preparation for moral science, or be taken in the second way as a science annexed to moral philosophy, sociology is only apparently speculative; but really pertains to practical knowledge:

c1. If taken in the first way indeed, because then it is only the matter of practical science; and as matter, from itself is ordered towards the constitution of practical science.

c2. But if taken in the second way, because already not abstracting from the end of human actions, such knowledge is 'per se' practical.

d. But in sociology, even when in continuity with moral philosophy, although it is unable to abstract {perfectly from normative judgments because it pertains to practical knowledge - nevertheless it ought voluntarily to leave these normative judgments, as far as is possible, merely implicit and virtual.

d1. Both for the reason that:

d1a. the proper office of the science of sociology is a simple office of experimental information,

d1b. and therefore it ought to leave explicit normative judgments to moral philosophy, with which it is connected.

d2. And for the reason that:

d2a. to man pertains indeed judgment:

d2a1. about human acts considered in themselves.

d2a2. not about men nor about historical events: for these are reserved to the judgment of God.

d2b. But to judge about human acts;

d2b1. pertains to moral philosophy,

d2b2. not to sciences of experimental information, which are concerned about men and historical events.

d3. Nevertheless for a right understanding of social facts:

d3a. there is required in the sociologist a knowledge of moral philosophy,

d3b. because these facts about which sociological enquiry is concerned are moral facts. (Cf. Yves Simon: *La critique de la connaissance morale*, pp.123-142; Maritain; *Science et Sagesse*. pp.278-288).

.SCmjMiVTIC SUMVIARY.

510. SCHEMATIC 'RECAPITULATION: What has been said in the fore-going chapter may be thus schematically summarized:-

Psychic.

Are not (as Proceeding from collective conscious  
says Durkheim) ness.

Coercive only.

Its OBJECT:  
social facts.  
which

Moral.

But are Proceeding from human activity for the  
procuring of a common good.

Imposing moral obligations.

Sociology

place which normative moral science ought to  
give place (as says Durkheim).

IT IS NOT a  
speculative  
science

Distinct from normative moral science (as  
says Durkheim).

Separated from all teleological (normative)  
~ir\_deration it is only a science improp-  
'y so-called (matter of experimental  
fact)

re; continued by moral  
philosophy, it is true  
science annexed to  
moral philosophy:

It cannot perfectly  
abstract from norm-  
ative Judgments,  
But as far as is  
possible, it keeps  
them implicit and  
virtual.

CHAPTER POETRY-POUR.

HISTORY..

511. ORDER OF PROCEDURE: This consideration of history:

- A. Will deal:
  - a. First, with the nature of history.
  - b. Secondly, with the method of history.

3. Hence the following order :-

On history  
Its nature  
Its method

Article one.

Article two.

## ARTICLE ONE.

### NATURE OF HISTORY.

512. NOTION AND REPORTANCE OF HISTORY; Under the name;

A. HISTORY is meant the DISCIPLINE WHICH BY SCIENTIFIC WORKS STUDIES HUMAN EVENTS.

B. The importance of this discipline is manifest; for by it we know the past which is of the highest interest to us:

§\* First indeed, SPECULATIVELY; for since man naturally desires to know all things, the knowledge of the past is not without intellectual satisfaction.

b. But secondly, HISTORICALLY;

b1. For by knowledge of the past man's present events and facts are explained: for present things have been influenced by past things.

b2. Moreover, history by its examples, is a "teacher of life".

C. In modern times:

a. history has made much progress:

a1. on account of greater perfection of methods (the employment of which has been rendered much easier and more efficacious through modern devices, such as printing, photography, more rapid transport etc);

a2. and on account of a better conception of this discipline.

b. Accordingly something will be said about each, to wit:

b1. about the nature of history,

b2. and about its method.

513. WHETHER HISTORY IS SCIENTIFIC: Regarding the nature of history there is controversy: for not till are agreed that history is genuine science.

A. For science is certain knowledge through causes (cf. n.386): but on two heads history seems to differ from the notion of science:

a. First, as regards certainty; for certainty is only about necessities:

a1. but human events are singular,

a2. and therefore contingent.

b. Secondly, as regards manner of knowing;

b1. For history is not knowledge through causes: it does not establish laws;

b2. In brief;

b2a. it does not explain facts,

b2b. but only describes them.

B. Notwithstanding this, some authors admit that history truly is science, not indeed in the "Aristotelic" sense, according to which science is of universals alone, but inasmuch as:

a. Though history is about contingent facts, nevertheless it can prove their existence with certainty.

b. It can moreover investigate the causes of events, and therefore explain them.

c. Lastly, it uses scientific methods.

C. And rightly indeed is this asserted, namely, that history is science, not indeed in the "Aristotelic" sense or simply speaking, but in a qualified sense (secundum quid);

e. For:

a1. The liberty of men is no obstacle to the proving, with certainty, of the existence of human events, since it is question:

si licet of proving the existence of past events: to which the question of whether they were free or not is indifferent;

alb. or of investigating the causes of a free act: for these can be determined at least conjecturally: which is very often the case also in the physical sciences.

a2. And therefore that history is science, is admitted:

a2a. Not only by Heilans and Positivists (v.g. Hegel, Taine, Marx, Herder, Vico, and the 'Sociological School'), who deny free-will;

a2b. But also by many others, such as Pesoh (Logica, n.743), Ggny. (Critica, pp.362ss) 'Palhories (La Philosophie au Baccalaureat, p.184), Boyer (Cursus Philos. I, pp.294s3), who affirm free-will.

b. Nevertheless it is to be noted that the certitude of history is of another species than physical or metaphysical certitude; nor ought history seek a certitude v/hereof it is incapable.

b1. The certitude of history:

bla. pertains to moral certitude, which is true "as in most cases",

bib. and is based on evidence of credibility, or of a thing testified.

b2. Most often, in history, is obtained a certitude arising from a convergence of probabilities or of indications: such certitude is indeed true certitude, for it arises:

b2a. not from addition of probabilities,

b2b. but from this, that a certain fact appears as the only reason explaining the concordance of all the facts.

514. HISTOIRE FISTIQUE TO THE THEORY OF PRACTICAL SCIENCE: To which genus of science history pertains, is easily determined after what has been said above' (nn.505-510,\* regarding sociology, and which 'a fortiori' avail of history)',

A. From this, that history is about moral facts, it is clear that history is to be reduced:

a. not to speculative knowledge.

b. but to practical knowledge.

B. Therefore, that history is not a true science unless it is in continuity v/ith moral philosophy is likewise clear, since it is:

a. science of simple information,

b. not experientially nonative.

C. For which reason:

a. since history still less than sociology can abstract from circumstances of time and place (cf. n.506, C.b),^

b. still more than sociology ought it 'per se':

bi. abstain from explicit normative judgments,

b2. and leave these judgments to the philosophy of history:

b2a. which is connected with history,

b2b. and to which it pertains to determine historical-laws.

ii. LECTURE TWO.

## METHOD OF HISTORY.

515. END OF THE METHOD OF HISTORY: The method of history is ordered towards this:

A. That facts be known with certitude: historical method as ordered towards this, will be considered first (n.516).

B. That right use be made of these facts by the historian to construct history: historical method as ordered towards this will next be dealt with (n.517).

516. SCIENTIFIC DETERMINATION OF FACTS: For the determination of facts, two tasks must be performed, to wit, that of HEURISTICS, and that, of HISTORICAL CRITICISM.

• 'S??.

A. HEURISTICS is ordered towards the finding of past facts in written documents, in monuments, and in oral traditions.

a. Monuments (v.g. pictures, buildings, clothes, weapons, coins, medals, seals, tools, statues) supply material testimonies.

b. Documents (v.g. annals, chronicles, deeds. Judiciary verdicts, inscriptions, official or private papers, literary works) supply rather psychological testimonies.

b1. These are found for the most part in libraries, archives, museums etc.

b2. With respect to these, certain auxiliary sciences are employed, v.g. epigraphy, paleography etc.

c. Oral traditions;

c1. are not indeed to be despised or spurned, as some writers contend;

c2. but the historian ought to use them with caution.

B. Facts, when found, must be subjected to HISTORICAL CRITICISM, which is ordered to the determining of the authenticity, integrity, interpretation and value of the facts.

a. As regards the AUTHENTICITY;

a1. Of oral traditions; Authenticity is determined by diverse signs, such as:

ala. Nearness to the time of the fact,

alb. The impossibility of a later origin of the tradition,

ale. The importance of the fact,

aid. The publicity or manifestness of the fact,

ale. The facility of explaining the absence of some testimony (v.g. from the law of the 'arcanum', the destruction of books, etc),

alf. The presence of some traces.

a2. Of documents and monuments; Authenticity is determined from certain signs, which may be either external to the document or monument or internal to it:

a2a. External signs are such as:

a2a1. the name of the author, especially in more ancient codices;

a2a2. quotations made by writers of the same period;

a2a3. the assigning of the document or monument by writers of the same period to such an author.

a2b. Internal signs are such as:

a2b1. language, style, or hand-writing, customary to a given author or period;

a2b2. facts, customs, arts etc. described in the document, agreeing with the period;

a2b3. opinions coherent with the minds or doctrines of an author.

b. As regards the INTEGRITY (of documents): That the text is had without interpolation, or suppression of some part, or corruption, is determined by almost the same signs as authenticity.

c. As regards the HISTORICAL CRITICISM. attention must be paid:

c1. To the language, abbreviations, style of the author, events assigned to the time of the document.

c2. To the literary style of the writing, according to the diverse manner of writing history at diverse periods and in diverse regions.

c3. To the evolution of the meaning of words.

d. But to determine the VALIDITY OF THE FACTS, two things must be examined, to wit, the knowledge and the veracity of the author (or witness):

d1. As to the knowledge of the author or witness;

d1a. Two things are to be examined:

d1a1. His intellectual fitness to have knowledge: and this indeed:

d1a1a. whether it be, for ordinary facts, a normal use of the senses and of reason,

d1a1b. or, if it be question of some speciality, a scientific habit about such subject (yet this is more necessary when it is question of the



interpretation of fact than when it is question of the perception of a fact).

dla2. His moral fitness to have knowledge: which requires his freedom from passion, prejudice, credulity, etc.

dlb. The knowledge of an author or witness will appear:

dlhl. iVom the concordant testimony of authors, if there be many who agree thereupon;

dlb2. from a narration descending down to minute details, making it clear that the author is conversant with the subject.

d2. As to the truthfulness of the author or witness, these questions are to be examined:

d2a. Yfhether before or after his testimony he always preferred uprightness to his own interest?

d2b. Whether:

d2bl. he had some interest in deceiving (v.g. avarice, ambition, loyalty to a party, hatred of another, desire to Justify his own opinion, desire for adulation, prejudices, desire for a striking effect, etc),

d2b2. or gave his testimony against his own interest (v.g. at the risk of his fortune or of his reputation or of his liberty)?

d2c. Whether several, speaking of the same fact, are concordant or not? (Here care is to be taken not to be deceived by a merely apparent disagreement).

d2d. Whether the author or witness narrated the fact publicly, yet no. one contradicting his assertion, at a time and place in which many must have known the truth?

517. CONSTRUCTION OP HISTORT; The scientific determination of facts is only the preliminary stage of history.

A. Therefore after the determination of the facts has been made, the construction of the history is to be instituted:

a. First. all the facts must be reconi^tructed. by the use chiefly of reasoning from analogy (cf. n.515).

b. Secondly, the facts must be ordered;

bl. either according to conditions extrinsic to the facts themselves (v.g. of time, place, society, nation, etc),

b2. Or according to resemblances of the facts themselves, and then with special attention to the influence of facts. .

c. Thirdly, the facts are divided in natural and homogeneous periods of time.

d. Fourthly, the omissions and 'lacunae' of documents must be supplied:

dl. which is done chiefly by use of reasoning from analogy,

d2, which howevcsr must be used with caution.

e. Fifthly

e1. A selection is to be made of the facts which are to be introduced into the narrative, together with apt, full and concise formulas or modes of expression, so that the history will be, like every science, a certain economy.

e2. This narrative;

e2a. which cannot be purely objective, i.e. without any Judgment of moral value, by reason of the nature of history,

e2b. nevertheless ought, as said above (n.514), abstract, as far as possible, from these Judgments. (Cf. De Smedt: Principes de la critique historique; Langlois et Seignobos; Introduction aux etudes historiques; Benigni; Historiae Ecclesiasticae Propaedeuctica; Geny: Critica, pp.362-380).

B. Prom history, properly so-called, as regards construction, differ monographs', which are treatments of very restricted questions or parts of history.

a. These monographs ou^t to be, as far as possible, exhaustive.

b. They are rather preparation for history than history properly so-called, and therefore are of great usefulness.



## APPENDICES TO LOGIC

## AF PSNDIX\_U

## INSERTION AFTER PARAGRAPH 11.

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11. bis. ILLUSTRATION OF THE OBJECT OF LOGIC: Accordingly, the above doctrine of the formal object of logic may be illustrated from the formal object of the science of ARCHITECTURE.

A. For ARCHITECTURE is the science of the order or DESIGN of buildings.

a. Let us suppose that a builder in Italy builds a building according to a certain design, and that a photograph is taken of that building. Then we have:

- a1. The **BUILDER**. i.e. the AGENT,
- a2. His BUILDING ————— i.e. his ACT,
- a3. the BUILDING **built**. ———— i.e. his WORK or PRODUCT
- a4. the DESIGN of this **building**. i.e. the ORDER of the work.
- a5. the PHOTOGRAPH — — — — — i.e. the SIGN of the work.

b. Now let us suppose that an architect in Australia wishes to study the design of that building situated in Italy. Now this architect:

b1. Is not primarily and essentially concerned with the BUILDER, for architecture is not the science of builders, — though he may be concerned in some manner with the builder, forasmuch as certain abilities are required in a builder to build a building of such design.

b2. Nor is he primarily and essentially concerned with the ACTS of the builder (his building), for architecture is not the science of these acts, i. e. of building as it is an activity, — though he may be concerned in some manner with these acts for a reason similar to that on account of which he is concerned with the builder.

b3. Nor is he primarily and essentially concerned even with the BUILDING (the work or product of the builder), for architecture is not the science of buildings, > though he will be much concerned with the building as it is the matter or subject wherein the design is realised; but then for an understanding of the design,

b4. But he is primarily and essentially concerned with the DESIGN or order of the building, for architecture is the science of the design of buildings. And he is concerned with other things forasmuch as they are related to the design of the building as conducing to an understanding of such design.

b5. Nor is he primarily and essentially concerned with the PHOTOGRAPH or sign of the building, for architecture is not the science of photographs, — though he will be much concerned with the photograph, which he can have and examine, forasmuch as it leads him to an understanding of the design of the building, which, since it is absent from him, he cannot examine immediately.

c. Accordingly, the formal object of architecture may be thus schematically illustrated:-

APPENDICES TO LOGIC

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A. For ARCHITECTURE is the science of the order or DESIGN of buildings.

a. Let us suppose that a builder in Italy builds a building according to a certain design, and that a photograph is taken of that building. Then we have:

- |     |                    |                  |                  |
|-----|--------------------|------------------|------------------|
| a1. | The GUILDER        | _____            | i.e. the AGENT,  |
| a2. | Eis BUILDING       | _____            | i.e. his ACT,    |
| a3. | the BUILDING       | <b>built.</b>    | i.e. his V/CRK   |
|     |                    |                  | or PRODUCT       |
| a4. | the DESIGN of this | <b>building.</b> | i.e. the ORDER   |
|     |                    |                  | of the work.     |
| a5. | the PHOTOGRAPH     | _____            | i.e. the SIGN of |
|     |                    |                  | the work.        |

b. Now let us suppose that an architect in Australia wishes to study the design of that building situated in Italy. Now this architect:

b1. Is not primarily and essentially concerned with the BUILDER, for architecture is not the science of builders, - though he may be concerned in some manner with the builder, forasmuch as certain abilities are required in a builder to build a building of such design.

b2. Nor is he primarily and essentially concerned with the ACTS of the builder (his building), for architecture is not the science of these acts, i.e. of building as it is an activity, - though he may be concerned in some manner with these acts for a reason similar to that on account of which he is concerned v/ith the builder.

b3. Nor is he primarily and essentially concerned even with the BUILDING (the work or product of the builder), for architecture is not the science of buildings, - though he will be much concerned with the building as it is the matter or subject v/herein the design is realised; but then for an understanding of the design.

b4. But he is primarily and essentially concerned with the DESIGN or order of the building, for architecture is the science of the design of buildings. And he is concerned with other things forasmuch as they are related to the design of the building as conducing to an understanding of such design.

b5. Nor is he primarily and essentially concerned with the PHOTOGRAPH or sign of the building, for architecture is not the science of photographs, - though he will be much concerned with the photograph, which he can have and examine, forasmuch as it leads him to an understanding of the design of the building, which, since it is absent from him, he cannot examine immediately.

c. Accordingly, the formal object of architecture may be thus schematically illustrated:-



B. Now LOGIC is the science of the ORDER or design of the work or product of the intellect..

a. But that which the intellect orders or designs is its concepts, which is acquired FROM THINGS, by a first act which is accordingly named FIRST INTENTION.

b. But it is by a second act, which accordingly is named SECOND INTENTION, that the intellect orders or designs that which it has acquired from things (i.e. its concepts), endowing these concepts with mental relations, that is, with the order of design.

c. Therefore, when it is question of the object of logic, there are to be distinguished:

- c1. the **INTELLECT.i.e.** AGENT,
- c2. its ACTS as ordering its **concepts.i.e.** ACT,
- c3. its ordered WORK or **product.** i.e. WORK,
- c4. the **ORDER of this work.i.e.** ORDER,
- c5. SPEECH expressing its ordered **work.i.e.** SIGN.

d. Now the logician;.

d1. Is not, primarily and essentially concerned with the INTELLECT, for logic is not the science of intellect (the science of human intellect is psychology), - though he is concerned with the intellect forasmuch as it is the orderer required for the order in its products.

d2. Nor is he primarily and essentially concerned with the ACTS of the intellect, for logic is not the science of the acts of the intellect (the science of the acts of human intellect is psychology), - though he is concerned with these acts forasmuch as they are the productions of the order in the products of the intellect.

d3. Nor is he primarily and essentially concerned with the WORKS or products of the intellect, for logic is not the science of the products of the intellect (the science of the products of the human intellect is psychology), though he is concerned with these products as the matter or subject wherein the order is constituted; but then for an understanding of this order.

d4. But he is primarily and essentially concerned with the ORDER with which the intellect endows its concepts in its products, for logic is the science of this order. And he is concerned with other things forasmuch as they are related to this order as conducing to understanding of it.

d5. Nor is he primarily and essentially concerned with SPEECH or the sign of the products of the intellect, for logic is not the science of speech (the science of speech as it is an act is psychology, while the science of speech as it is a syntactically ordered product is grammar), - though he is much concerned with speech (terms, propositions and argumentations) which is sensible and, therefore, easily examined, forasmuch as it leads him to understanding of the order or design of the products of the intellect which are not sensible and, therefore, are not so easily examined.

e. Now, let it be understood for clarity, that there are three genera of ACTS OF SECOND INTENTION WHEREBY THE INTELLECT ORDERS its concepts (that is, orders what it acquired by its first intention from things), - which genera of acta are SIMPLE APPREHENSION^

## JUDGMENT and REASONING.

- e1. Of SIMPLE APPREHENSION;
    - e1a, the product or work is the UNIVERSAL CONCEPT,
    - e1b, while the order or design whereby the concept is ordered in that work; is PREDICABILITY,
    - e1c, while the sign of that work is the TERM {or word}
  - e2. But of JUDGMENT;
    - e2a, the product or work is the ENUNCIATION,
    - e2b, while the order or design whereby concepts are ordered in this work is PREDICABILITY\*
    - e2c, While the sign of this work is the PROPOSITION (or sentence),
  - e3. While of REASONING;
    - e3a, the product or work is (also called) REASONING,
    - e3b, while the order or design whereby concepts are ordered in this work is ILLATION.
    - e3c, while the is ARGUMENTATION
- C. For the understanding of the ORDER or design constituted by the intellect through its acts of second intention in its concepts, let us suppose that my intellect has drawn into itself from things these five natures or "blocks of reality", to wit, "man", "idiot", "poet?", "wise" and "mortal". (The act of intellect imbibing into itself these blocks of reality or natures is really the act of FIRST INTENTION, and these natures existing in the intellect are REAL BEING, i. e. blocks of REALITY).
- a. Let us suppose that my intellect got the block of reality "man" from Peter and Paul and Mary and Agnes. Thus Peter and Paul and Mary and Agnes have themselves as TERM WHEREFROM this block of reality was got or abstracted.
    - a1. Then my intellect reflects on this block of reality "man", and sees or apprehends it as predicable of (i.e. sayable of) Peter and of Paul and of Mary and of Agnes, and also of Kenji- and of John and of Joan and of Ruth etc., or even of some subject or subjects not yet known determinately,
    - a2. Now:
      - a2a, this block of reality stands in my intellect as RELATED TO/AROUND Peter and Paul and Mary and Agnes and Henry etc.;
      - a2b, and these individuals have themselves to it as TERM WHERE-UNTO it is related.;
      - a2c, and the relation whereby "man" is related to these individuals is PREDICABILITY.
    - a3. Thus now "man" stands in my intellect as ORDERED or DESIGNED for predication, i. e, though it is not yet an actual predicate, it is already APT TO BE A PREDICATE.
    - a4. The act whereby my intellect thus endowed the block of reality "man" with this ORDER or DESIGN or APTITUDE for predication, is an act of SECOND INTENTION (of simple apprehension), i.e, it is not an act whereby intellect GETS SOMETHING FROM REALITY (such an act would be first intention), but it is an act whereby intellect ORDERS WITHIN THE INTELLECT ITSELF WHAT IT HAS GOT FROM REALITY.
  - b. Now let us suppose that my intellect goes further and pronounces the verdict "Peter is a man",
    - b1, Now;
    - b1n, this block of reality "man" stands in my intellect not merely as APT TO BE PREDICATED of something, but as ACTUALLY PREDICATED.
    - that is, it now has in my intellect a NEW RELATION to Peter;

bib, and Peter has himself towards "man\*\*" as IN A NEW MANNER a TERM WHEREUNTO "man" is related;

blc. and this new relation whereby "man\*\*" is now related to Peter is called PREDICATION.

b2. Thus "man" now stands in my intellect as ORDERED or DESIGNED or "ARCHITECTURED" hjr predication INTO A NEW/ COMPOUND UNIT which is called an ENUNCIATION or mental proposition.

b3. The act whereby my intellect thus endowed the block of reality "man" with this ORDER or DESIGN or PREDICATION is an act of SECOND INTENTION (of judgment), i. o. it is an act whereby intellect ORDERS WITHIN THE INTELLECT ITSELF WHAT IT HAS GOT FROM REALITY.

c. Now there is still another manner wherein my intellect may ORDER or 'Architecture' its concepts (i.e. what it has got from reality).

c1. Thus my intellect:

da. may order or "architecture" concepts thus:

" (Every) Man	is	MORTAL
But (every) POET	is	a MAN.
Therefore (every) POET	is	MORTAL."

clb. Which order or "architecture" may be thus represented:-

clc. That is, given that "man" is subjected to the predicate "mortal", and that "poet" is subjected to the predicate "man", then "poet?" is subjected to the predicate "mortal".

cld. Now:

cld1. this block of reality "man" stands in my intellect designed or ordered or "architected" as a MEDIUM wherewith "mortal" and "poet" are compared,

cld2. and these other two blocks of reality, to wit, "inortal<sup>n</sup> and poet<sup>u</sup>, stand in my intellect as COMPARED EXTREMES (i.e. as IviNCR TERM or SUBJECT andM/-JCR TERM or PREDICATE);

cld3. and the new relation or ORDER or DESIGN or "ARCHITECTURE?" with which these blocks of reality are now endowed is called ILLATION.

cle. Thus these "blocks of reality" or natures or concepts are now ordered together or "architected" into a unit which is called REASONING.

clf. And the act whereby my intellect thus endowed these concepts or "blocks of reality\*" with this ORDER or DESIGN or "ARCHITECTURE?" is an act of SECOND INTENTION (of reasoning), i.e. it is an act whereby intellect ORDERS WITHIN THE INTELLECT ITSELF WHAT IT HAS GOT FROM REALITY.

c2.. For a clearer exemplification of this, let us consider a bad ordering or "architecture" of concepts or "blocks of reality":



c2a. in this bad reasoning:

"Some MAN	is	WISE.
But an IDIOT	is	a MAN .
Therefore an IDIOT	is	WISE."

c2b. Which may be represented thus;

WISE

(Other) MAN

D. Accordingly;

a. The formal object of logic is the ORDER or "ARCHITECTURE?" or DESIGN which the intellect makes, by its acts of SECOND INTENTION, in the natures or "blocks of reality\*" or concepts which Ly its acts of first intention it drew into itself from things - which order is indeed MENTAL BEING, to wit, MENTAL RELATION.

b. And which order or mental relation is indeed threefold, to wit.

- b1. PREDICABILITY,
- b2. PREDICATION,
- b3. and ILLATION.

E. Therefore, the formal object of logic may be illtistrated by the following schematic representation:-

