Aporiae E and $\mathbf{E}$ of Aristotle's Metaphysics: It also necessary to inquire whether sensible substances alone must be said to exist, or whether there are other substances in adition to these; and whether they are unique, or whether there are many classes of substances, as was claimed by those who created the forms and made objects of mathematics an intermediate class between these forms and sensible substances.

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## OUILINE

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## THE BASIC TEXTS








## APIETOTEAOTE TA META TA $\Phi \Upsilon \Sigma I K A-995^{6} / 3-995^{6} / 7$.

"... quorum prima est, utrum dicendum sit, quod sint solum substantiae sensibiles, ut antiqui naturalis posuerunt, vel etiam praeter substantias sensibiles sint aliae substantiae imateriales et intelligibiles, ut posuit Plato. Secunda quaestio est, si sunt aliquae substantiae separatae a sensibilibus, utrum "sint unicae" ident unius generis tantum, aut sint plura genera talium substantiarum, sicut quidam attendentes duplicem abstractionem, scilicet universalis a particulari, et formae mathematicae a materia sensibili, posuerunt utrumque genus subsistere".
S. Thomae Aquinatis, "In Duodecim Libros Metaphysicorum Aristotelis Espositio" L. III, I. II, 350,351.

STATEMENT OF THE PROBLEM:
E: "It is also necessary to inquire whether sensible substances alone must be said to exist, or whether there are other substances in addition to these."

F: "And whether they are unique, or whether there are many classes of substences; as was claimed by those who created the forms and made the objects of mathematics an intermediate class between these forms and sensible substances." ${ }^{1}$

Here we find ourselves in front of the question of whether beside sensible substances there are other sublstances, nominally non-sensibles. (E) And if there are non-sensible substances, we should ask whether they all belong to one genus, "non-sensibles", or whether there are many classes of such substances as was claimed by those who posit the forms and the objects of Mathematics as classes of non-sensible substances. (F)

Aristotle says in book XIII that: "Since our inquiry is whether there is or is not besides the sensible substances any which is imnovable and eternal, and, if there is, what it is, we mast first consider what is said by others so that if there is anything which they say wrongly, we may not be liable to the same objections, while, if there is any opinion common to them and us, we shall have no private grievance against ourselves on that account; for one must be content to state some points better than one's predecessors, and others no worse. $11^{2}$ According to that my treatment will be twofold. First we must consider what is said by others: "as was claimed by those who created the forms and made the object of mathematics... ${ }^{3}$ (F). Second we should go on whether there are other kinds of non-sensible substances besides those, and what they are. (E) I divided my problem as follows:
$E_{1}$ : whether sensibles alone exist
$\mathrm{E}_{2}$ : whether other substances in addition to these exist
If the latter:
$F_{1}: \quad$ whether they are unique,
$\mathrm{F}_{2}$ : whether there are many classes of such substances. (Exploration and refutation of the theories of those who posit the Forms and Objects of Mathematics as separate substances.)

F $2 a$ : whether the ideas are separated from sensible things or not
$\mathrm{F}_{2 \mathrm{~b}}$ : whether the objects of Mathematics are substances separate from sensible things or are in them.

The treatment of intermediate entities: "Whether the objects of Mathematics are substances separate from sinsible things or are in them" ( $\mathrm{F}_{2 \mathrm{~b}}$ ) gives rise to aporiae $U$ and $V: 4$ "and In addition to this question we must inquire whether numbers or lengths and points are somehow substances or not" (J) 5 . "and if they are substances, whether they are separate from sensible things or are found in them" $(V)^{6}$. The consideration of the ideas is taken under its particular aspects in different questions. I should deal with those theories inasmuch as they are related to my problem.

## EXPLANATION OF THE PROCEDURE OF THIS WORK:

After I have explained the statement of my question, my first treatment
in this work is to esplain the reason for the consideration of the question in the context of the Metaphysics.

Then I pass to consider what pre-aristotelic philosophers have said about the different classes of substances. And I give their opinion in the section under the title of "History".

In the Dialectical Presentation of the problem, I analyze the procedure of Aristotle, while giving my owm observation.

Then I follow the development of the problem from book IV through book XIV. Even if the main considerations in regard to my particular inquiry are in book V, book VII, and book XII, I show how other books are related in a way to my problem, and how they give ideas that are usefull to the whole treatment of my work.

In particular: book $V$ shows the different meaning of the term swbstancer book VII destroys the Theory of Ideas of Plato, book XII shows the necessity of the existence of substance, and book XIII gives further reference to the Flatonic Ideas and considers the Mathematicals.

Finally I give a summary, which tries to synthesize my work and gives an answer to the problem, based on the anterior considerations.

REASONS FOR THE CONSIDERATION OF THE QUESTION:
Aristotle has stated in different sections of the Metaphysics that the principal subject of this science is substance. He says in the statement of problem $E$ that "it is also necessary to inquire whether sensible substance alone must be said to exist..."7 The main reason for that "necessity" is that he has treated sensible substances in his book of Physics (which shows also other substances) and if there is not any other kind of substance, there will be no reason for this science.

First Philosophy will deal with sensible substances also, but under the aspect that they have in common with other substances: that is "substance", and not "sensible". If there are not other kinds of substances, Physics would fulfill the consideration of sensible substances. ${ }^{8}$

Saint Thomas repeatedly observes this necessity discovered by Aristotle: "For if this science is concerned with sensible substances alone, it does not seem to differ from the philosophy of nature."9.."Philosophy of Nature would be first Philosophy if there were no other substances prior to mobile corporeal substances. ${ }^{10}$ The same consideration is found in the commentaries of books VI and XI. 11

Aristotle also knew that other philosophers have found by reason the necessity of other kinds of substances, because they were aware that "materiality" is not involved necessarily in the notion of substance. ${ }^{12}$ And so he found it necessary to analyze their theories to get the truth involved in such positions and refute their falsities, and he does so in aporia F.

## HISTORY


In his historical digest on the previous attempts to Wisdom in the first book of Metaphysics, Aristotle deasl with the theories of those who created the forms and made the objects of mathematics an intermediate class of substances between sensibles and forms, But he does so under the aspect of first principles and causes, because he is giving a history of the "Science of Causes".

In that treatment I find a whole consideration of the historical background of the question of whether beside sensible substances there are other classes of substances.

Aristotle, talking about the history of those philosophers leaving out Formal causes, says "Of the first philosophers, then, most thought the principles which were of the nature of matter were the only principles of all things. 114 Even if the reference is about principles, it'is clear that those philosophers, known by the ones who said that sensible substances exist alone.

The Pythagoreans posited the numbers as principle of things, but they were mainly concerned with the sensible world. They differ from the physicists in that they used principles and elements which were foreign to them. "The Pythagoreans treat of principles and elements stranger than those of physical philosophers. (The reason is that they got the principles from non-sensible things, for the objects of mathematics, except those of astronomy, are of the class of things without movement.) ${ }^{15}$

They agree with the materialist in that "yet their discussions and investigations are all about nature"16 and "that the real is just all that
which is perceptible and contained by the so-called heavens."17
"After the systems we have named came the philosophy of Plato." 18
When Aristotle, in the statement of the question, talks about those who posit the forms and the object of Mathematics as the other kinds of substances, he is referring mainly to the Platonists.

I have found in book I and book XIII the historical background of the Theory of Ideas of Plato: ${ }^{19}$

Cratylus and Hereaclitus have posited that: 1) all sensible things are always in the state of flux, 2) there cannot be any scientific knowledge of particular things because if knowledge and thought is to have an object, there could be no knowledge of things which were in a state of flux. From that position it follows that there must be some other and permanent entities apart from those which are sensibles.

Socrates, dealing with moral matters, became the first to raise the problem of universal definition.

Plato has accepted Socrates and says that no definition can be given for any sensible thing, because sensible things are always "changing" (Heraclitus), and definition requires some kind of immutability.

So he finds the necessity to postulate some kind of substances separate from sensible things. Now Socrates did not make the universals of the definition to exist apart from sensible things. Plato did so.

Such universals or pure essences he called Ideas or Forms, and he said that all sensibles exist because of them and in conformity with them.

The Pythagoreans say that sensible substances exist by imitation of numbers. Plato changes the name to "participation."

Beside sensible substances and Forms Plato says there are the objects Of mathematics, which are_a kind of intermediate entities. They differ
from sensible things in being eternal and unchangeable, and from Forms in that there are many alike, while the Form is in each case unique. 20

The big difference of the theories of Plato and the Pythagoreans in regard to the mathematicals is given by Aristotle in the following quotation: "and so it is his (Plato) view that the numbers exist apart from sensible things, while they (the Pythagoreans) say that the things themselves are numbers and do not place the objects of mathematics between Forms and sensible things."21

In his latter days Plato identified the Ideas with numbers. "For it is from these by participation in the one that the Ideas are numbers." 22

From the anterior historical analysis based in Aristotelian texts and other books that I give in the bibliography, I conclude that in resume, their positions in regard to my problem are as follows:

Naturalists say that there is not any kind of substances in addition to sensibles.

Pythagoreans say thet the object of mathematics are a kind of nonsubstances that exist in sensible ones.

Platonists say that the ideas are another genera of substances and that the object of the mathematics are a kind of intermediate genera of substances between the sensibles and the Ideas, and are separated from both.

Those theories are related to my questions as follows:
E: only sensible substances....... sensibles (Naturalists) or also others? $\quad \therefore-\frac{1}{1}$ Pythagoreans



## DIALECTIC：（Book III）B




 $\varphi \propto \sigma ん$ हлハルフグ $\mu \alpha$ s＂ 23

With the anterior restatement of the problem Aristotle begins its dialectical disputation in the third book of the Metaphysics．According to the different opinions that are held in reference to the question，he gives arguments in support of those theories and against them．

In regard to the theory of species as kinds of separated substances， the Philosopher gives one argument pro and one argument con．The argument pro gives a reference to＂our first discussions concerning all of these things，＂24 where he talks about the exposition of the doctrine of Ideas that he gives in the first book of Wisdom，in which he states that Plato thought that＂this consideration（definition）refers to other entities and not to sensible ones．For according to him it is impossible that there should be a common definition of any of these sensible things which are always changing．${ }^{125}$

When Aristotle argues against the other side，he says that their posi－ dion is absurd and ridiculous because they are acting like those who say that there are gods of human form，when they say that there is a man－in－

 their sensible counter parts．For just as the latter made the gods nothing other than eternal men，in a similar way the Platonists make the Forms nothing other than eternal sensible things．
＂Furtherfore，ir any one holds that there are intermediate entities in
addition to the Forms and sensible substances, he will face many problems. ${ }^{27}$ And in reference to the intermediate entities of Plato he gives three arguments con and one pro.

First, the philosopher shows that there are different mathematical sciences in regard to different objects: a science about lines (geometry), a science about the heavens and the celestial bodies (astronomy), a science about visible lines (perspective), and a science about harmonies (music). If we posit intermediate objects, there would be lines between lines-inthemselves and sensible lines, and the same is true of other objects. There would be a heaven in addition to the one we perceive, and that other heaven would be either mobile or immobile. The first is impossible because nothing separate from matter can be mobile. The second is against reason, because it is of the very nature of the heavens to be in motion. 28

If sound and visible lines were intermediate entities, it would also follow that there are intermediate senses, and intermediate animals between animals-in-themselves and sensible animals. But this is altogether absurd. Therefore the mathematicals are not intermediate entities between sensibles and the forms. 29

Second, he argues from the classes of things that are included in the sense of mathematical sciences. Geometry deals with intermediate things that are not sensible (lines and circles by the process of abstraction). Geodicy deals with sensible measurements, therefore there should be an intermediate science to deal with intermediate objects. Again, there should be an intermediate medicine between medidine-in-itself and medicine in particular. Again, there should be an intermediate health between health-initself and health in particular. But this is clearly false. Therefore the
objects of mathematics are not separated from sensible things. 30
Third, he passes on to show that there connot be an intermediate science between Geometry and Geodicy, because Geodicy does not deal with sensible continuous quantities. Before he has shown that Geometry deals with abstraction and Geodicy with sensible measures and that there should be another science which would deal with intermediate measures. Now he uses a dialectical argument saying that Geodicy is not concerned with sensible continuous quantities, for in this case it would be destroyed when they are destroyed, and this is contrary to the character of science. "Not even this is true that mensuration deals with perceptible and perishable magnitudes; for then it would have perished when they perished." ${ }^{31}$ If Geodicy is not concerned with sensible measures, there can not be an intermediate science nor an intermediate measure. Therefore, there are not intermediate quantities.

Saint Thomas notes that the anterior argument can be brought in defense of the intermediate entities of Plato because if Geodicy can not deal with sensible measures as was show before, it should deal with an intermediate class of measures. 32

Then, Aristotle gives an argument in support of the theory of Plato in regard to mathematicals. Science has to treat with things as they are. The things that Geometry says about the circles and lines are not found to be true in the case of sensible things. The astronomers use the stars as points even though they are bodies having extension. And so it seems, that geometry does not deal with perceptible continuous quantities and astronomy does not deal with the heavens which we perceive. 33

After the consideration of the theory of the mathematical entities as intermediate classes of substances, the Philosopher discusses the position
of those who posit the mathematicals in sensible things. "Now there are some who say that these so-called intermediates between the Forms and the perceptible things exist, not apart from the perceptible things, however, but in these; the impossible results of this view would take too song to enumerate, but it is enough to consider even such points as the following." 34

Forms and intermediates are held by reason of abstraction on the part of the intellect. For the same reason that some say that the intermediates esist in sensibles, we can posit that the forms also do, and this is against the very nature of the Forms or Ideas of Plato. 35

If we posit the mathematicals in sensible things, we would have a mathematical body existing simultaneously with a sensible body. And then, we have two bodies existing in the same place. Each of these bodies has dimensions by reason of which they cannot be in the same place. Therefore the mathematicals are not in sensible things. 36

Anything that exists in a thing that is in motion has motion. The sensibles are in motion. Therefore, if the mathematicals exist in sensible things, they would be in motion, but this is contrary to their intelligible constitution. Therefore the mathimaticals are not in sensible things. 37

Again, if the mathematicals exist in sensible things there would be a heaven in addition to the one which we percieve, but in the same place. And this is quite impossible. 38

The reason that moves the authors of the theories of Ideas and Mathematicals, are based on a wrong conception of the notion of abstraction. They posit a twofold process of abstracting things.

The intellect is said to abstract the universal from the particular. And according to this mode of abstraction, they posited separate forms which
subsist of themselves. They failed to show that those universal concepts exist as universals in the mind and are predicated essentially of particular substances, as in the right notion of universals. But for Plato those concepts in their universal aspect constitute separate substances. 39

The intellect is said to abstract from sensible matter certain forms in whose definition seasible matter is not given. (Example; the abstraction of a line from this paper.) And according to this mode of abstraction they posit the mathematicals, which they said are midway between forms and sensibles. They failed to show that those mathematicals can be abstracted (in the second degree) from matter so that they exist in the mind as objects of the science of Mathematics. 40

The intellect can consider a sensible thing without some attributes and under particular aspects. (Example; I can consider black paper without black itself being considered.) Thus, the intellect can consider sensible things inasmuch as they are substances (universals) or continuous quantities (mathematicals) without eonsidering matter and motion. And this is to abstract from them.

The intellect does not abstract in such a way that it understands forms and continuous quantities to exist without matter and motion. And we have two possibilities: the intellect is false because there is not correspondence with reality; or the things that the intellect abstracts are separate in reality. 47

B00K IV T
In this book Aristotle states that inasmuch as all substances are beings or substances, they belong to the consideration of Metaphysics, but inasmuch as they are particular kinds of substances they belong to the special sciences. Because it is not necessary for one science to consider all the species of one genus according to their special notes. 42

And Saint Thomas reiterates the position in the following panagraph: "Nam omes substantiae, inquantum sunt entia vel substantiae, pertinent ad considerationem huius scientiae: inquantum autem sunt talis vel talis substantia, ut leo vel bos, pertinent ad scientias speciales. ${ }^{143}$

The anterior quotation is a direct reference to aporia $D$ and $C$. In regard to aporia $E$ and $F$ there is the implication that there are many kinds of substances.

In the rest of the Book there is no more direct reference to my particular consideration.

## BOOK $V \quad \Delta$

Here I find the diferent meanings of the word oćád (substance). That consideration is very important to a clear understanding of my problem because we have to know what we are talking about, before we treat of the question.

The term substance is used in four senses. 44
a) Substance means particular substances, such as the simple bodies: earth, water, and the like. And in general means all bodies even thouth they are not simple (e.g. animal, plants, stones, blood, etc.). 45

They are called substances because they are not predicated of another subject, but other things are predicated of them. (Description of First Substance in the Categories.)
b) Substance means all those parts of the foregoing substances which constitute their limits and designate them as individuals (according to the opinion of Platônists and Pythagoreans) and by whose destruction the whole is destroyed. (e.g. a body is destroyed when the surface is.) ${ }^{46}$

Bodies are composed of surfaces, surfaces of lines, and lines of points and thus it would follow that the point is the substance of the line...

And in this sense number seems to constitute the entire substance of all things because when number is destroyed nothing remains in the world; for what is not one is nothing, and similarly, things which are not many are non-existent.

The anterior view of substance fails in that which is found to be common and necessary to all things does not necessarily constitute their substance, but it can be some property following from substance, or from the principle of the substance. 47

They failed to distinguish between the unity which is interchangeable with being and that which is the principle of number
c) Substance means the cause of the foregoing substances which are not predicated of a subject; and it is not ixtrinsic to them but is intrinsic like a form. It is in this sense that the soul is called the substance of an animal. 48
d) Substance means the quidity of each thing, which the definition signifies.

The form is part of a thing's essence or quiddity, but the essence or quiddity itself of a thing includes all its essential principles.

It is in this sense that genus and species are said to be the substance of the thing of which they are predicated, because they do not signify the form alone but the whole essence of a thing. 49

We can reduce the foregoing senses of substances to two:
First Substance means a particular thing which exists of itself and is capable of existing apart because it is distinct from every thing else and cannot be common to many. 50

A particular substance differs from universal substances in these three aspects. A particular substance is not predicated of inferiors whereas a universal substance is; , universal substance subsists only by reason of particular substance, which subsists of itself; a universal substance is present in many things whereas a particular substance is not, but is distinct from everything else and capable of existing apart. 51

Second Substance: the form and species of a thing can be called substance. The form and species are comprehended under one thing-a being's essence. Second substance is the essence with capability of esse per se. 52

Aristotle omits the sense given in (b) because it is a false one and he omits matter, which is called substance, because it is not substance actually. Howeter it is included in the first sense of substance. 53

BOOK VI E
In a direct reference to aporiae $C$ and $D$ the Philosopher states that:
Philosophy of Nature considers sensible or material things and investigates one kind of soul-the kind that is not defined without sensible matter. 54

Mathematics considers things which are not really separate from sensible matter, but are separate by way of abstraction. And he says "presumably", because he will prove that in other books. 55

Metaphysics considers what is imovable, eternal, and separable from matter, the First Cause of all beings-God. This last sentence does not say that Metaphysics deals with non-sensible substances alone, but says rather that the treatment of God will be a part of the consideration of this science irithout the exclusion of other substances. In his work on the subject, Owens notes that Aristotle seems to retain the Platonic and Parmenidean conception that Wisdom must deal with incorruptible and unchangeable boing. 56

If there is no substance other than the sensible, Philosophy of Nature will be the First Science. But if there is some immobile substance prior to natural substances, there will be a science of this substance. This science is Metaphysics, which will include everything in its most general aspect. 57

The anterior considerations clearly state the necessity of another type of substance beside sensibles for the existence of Metaphysics. I have dealt with that necessity in the section: "Reasons for the Question."

## BOOK VII Z

In this book Aristotle gives the different meanings of substances 58 , and after some consideration of substances as a subject (matter? form? composite? $)^{59}$ he begins his treatment of sensible substances. 60

In his consideration of sensible substances, the Philosopher says that he considers it in the first place, because all philosophers agree in the point that some sensibles are substances, 61 and he gives some references to the theory of Ideas of Plato, But he does so in the context of sensible substance. 62

Then he considers "whether the universals are substances." In reference to that I am going to: first, give an outline of his treatment; second, tell how other problems take care of particular sections of the outline; and third, explain the part thathis mider consideration.

Outline of the treatment:
a) The Universals are not Substances.
b) The universals are not separated from sensible substances.

There are arguments on the ground that they are predicated of many things. 63

There are arguments on the ground that universal is part of a definition and essence. 64
They are not separate substances. 65
If they are separate they are not definable.
c) Unity and being are not subatances. 66
d) General reference to the Theory of Ideas. 67

When aporiae $L, M, N$ and 0 consider the Theory of Ideas under the aspect of principles, they have to show that the universals are not substances (a) and that they are not separate from sensible things (b). I am going to give some proofs against the universals as substances, taken from the arguments
on the ground that they are predicated of many things (a). I take for granted the proof of the section about universals as separate substances. The treatment about unity and being is taken by aporia R (c). And finally, I will consider the general critique of the Platonic Theory of Ideas (d). Before we start our explanation of the arguments we should consider the different meanings of the term "universal".

Universal can be taken to mean the nature of things to which the intellect attributes the aspect of universality, and in this sense universal signifies the substances of things inasmuch as they are predicated essentiâlly. In this sense universal is a second substance. 68

Universal can be taken in the sense that animal or man in their universal aspect constitute substances (Plato's Ideas). 69

Now, universal in the second sense cannot be a substance.
The substance of each thing is proper to each and does not belong to something else. A universal by nature is common to many. If universal is a substance, it should be the substance of something. There are two possibilities. The universal could be the substanc of all things to which it belongs. But that is impossible because things are many when their subsem tances are many and distinct. The universal, then, might be the substance of one of the things. If that is the case, all things will also be that one, since those things whose substance is one have one essence and are themselves one. Therefore universals (Ideas) are not substances. 70

And again, speaking from the viewpoint of reality, substancesmeans what is not predicated of a subject. Universal is always predicated of some subject. Therefore universals are not substances. 71

Then, some one may say that universals are not substances in a way in
which an essence is, but as something existing in these particular things as animal exists in man and horse. But that is not the case. If animal in common is a substance, it follows that there is an intelligible expression of this substance. And animal will be predicated primaiily of that common substance and will signify its proper substance, whether it be definable or not. It will be impossible for it to be predicated of many things. Therefore universals are not substances. ${ }^{72}$

The Platonists discovered through the use of reason that there must be some incorruptible and incorporeal substances, since the notion of substances is not bound up with corporeal dimensions.

Aristotle says that they were right insofar as they maintained that forms are separate, but they were wrong when they said that they were separate and exist by themselves, and that the same time they have being in many things. Because that seems to be contradictory.

They make the incorruptible substances to be of the same nature of corruptible, as the ancients attribute human characteristics to gods. For them they specifically are the same with the difference that separate forms are "forms-in-themselves" without other things as happens in sensible substances. Man-in-hinself has only the attributes of his nature, but that particular man has many other accidents. Even if we do not know how to express what separate substances are and of what nature they are, "perpaps" it is still necessary that there should be some separate substances in addition to sensible ones and of different species than these and Aristotle says "perhaps" because he will consider the answer in book XIII. 73

By now it is evident that no universal predicates are substance. And we have found the answer to the section of my problem "whether the universals
are separated from sensible things or not."
I said before that aporiae $U$ and $V$ will take care of the section in reference to Mathematicals. ${ }^{74}$ Therefore I have finished the negative side of aporia F "Refutation of those Theories."

BOOK VIII H
This book gives some further insights into the views of both those who hold the forms and the mathematicals, and those who do not. Aristotle restates the opinion that some sensible substances are admitted by all, but there are others about which some thinkers have expressed views peculiar to themselves. 75

Ans those thinkers have posited the Ideas and the Mathematicals as having separate existence. They adopted this position because they thought that for every abstraction of the intellect there is a corresponding abstraction in reality.

Thus because the intellect considers the universal apart from particular things, they held that the forms have separate existance by themselves and since the intellect considers some forms apart from sensible material things (lines, curvatures, etc.) they also held that the mathematicals have separate existence. 76

In the dialectical portion I have already shown how it was a false notion of abstraction which led these men to these false theories.

Aristotle considered the universal quiddity to be derived from the intelligible structure of real substances. Whereas Plato saw the universal to exist more as a substance than the singular thing itself. And with this way of considering substance, according to which both a genus and universal are called substances, is connected the Theory of Ideas. 77

In bookVIII it is shown also that neither the universal nor the genus is a substance from arguments based on the notion of definition.

Aristotle deals with the Ideas and the Mathematicals in book XIII.
In the rest of book VIII he considers the principles of sensible sub-
stance. When he treats of the formal principle, and of the union of matter and form, he deals with the Theory of Ideas but under the aspect of principle.

## BOOK IX $(-1)$

The main subject of this book is "being as substance as divided by potency and act."

Aristotle proves that act is prior to potency in substances, definition and perfection, by arguments drawn from corruptible things themselves. And Later he does the same thing by comparing eternal things with corruptible things. ${ }^{78}$

Eternal things as such are not in potency, whereas corruptible things as such are in potency. He states that: $\frac{\text { eternal }}{\text { sensible }}: \frac{\text { act }}{} 79$

In this book we heve stated that there are eternal substances and that as such they are in act and not in potency. And this consideration will be useful later on.

## BOOK X I

The principal inquiry of this book is unity and being. Considering the one in itself Aristotle treats its modes and properties.

The Philosopher states the question of whether being and unity are substances, and he treats the theories of Ideas and Mathematicals under that aspect. 80

Again, he expresses the two senses in which the term substances is used. ${ }^{81}$

The First Substance; to which it properly belongs to subsist and means the supposit in the genus of substance.

The Second Substance; means thing's quiddity.
The same consideration is treated in Book V.

## BOOK XI K

Aristotle gives a preparatory sumary of the considerations, and in reference to my problem I found the following results:

Motaphysics deals especially with the separate substances, although it does treat all substances inasmuch as all belong to one common class of essential being. 82

Metaphysics deals with sensible substances inasmuch as they are suber stances, but not inasmuch as they are sensible and movable; for this latter belongs to Philosophy of Nature. But the proper study of this science has to do with substances which are neither ideas nor separate mathematical entities, but primary movers, as will be seen below. 83

In the "What Considered" of the book he deals with the consideration of whether or not it is necessary to posit the existence of something else in reality over and above singular things. 84 But he does so under the notion of "principle" and that belongs to aporiae $L$ and $M$. He also deals with !"whether substances are principles" and that belongs to aporiae $M$ and $S$.

In the consideration of the latter St. Thomas noted that even universals do not exist of themselves. 85

He states that in some cases it is obrious that the form is not separate; the form of a house, for example, is not separate from matter. 86 And it was for this reason that the Platonists did not posit ideas of artificial things, because the form of such things are actualities which can not exist by themselves.

In the rest of the book there is not any direct reference to my problem.

## BOOK XII

Here I find the answer to the question of whether beside sensible substances, there are other kinds of substances.

Aristotle, having explained that philosophy is concerned chiefly with substances, gives a division of substances and treats the parts of its division. He has said in book VI that there are two classes of substances, changeables and unchangeables, but here he distinguishes three kinds of substances. 87

Sensible Substances $\int$ (a) eternal, celestial bodies

Immovable and Imperceptible Substances. (c)
(b) perishable, plants and animals

Platonists: Forms and Mathematicals: NO:
Pythagoreans: Mathematicals: NO
Aristotle: An eternal and imnovable substance must exist.

Sensible substances are evident to almost all philosophers, but in regard to imovable substances there are discrepancies. The Pythagoreans and Platonists are wrong in their appreciation of abstraction, because by our twofold method of separating, the forms and the mathematicals exist in the intellect but they are not distinct in reality. 88

The two types of sensible substances are considered in their aspects of matter and motion in Philosophy of Nature, while Wisdom deals with them only under the aspect of "substance". First Philosophy considers both sensible substances and immovable substances inasmuch as both are beings and substances. 89

I have some reservations in regard to Aristotle's opinion about sensible substances. To our knowledge his division of perishable substances is unacceptable. Further exploration in the fields of astronomy and other
sciences have proved that the celestial bodies are composed of the same type of matter as the perishables. They are not eternals, but are subjected to the same tau of generation and corruption.

But our inquiry is mainly concerned with whether, beside sensible substances, there are other kinds of substances, and I do not have to consider his treatment of sensible substances. 90

In regard to separate substances Aristotle gives his own opinion and the opinion of other thinkers. 91

Aristotle's own opinion:

$$
\begin{aligned}
& {\left[\begin{array}{l}
\text { He proves that an eternal substance must exist. } 92 \\
\begin{array}{l}
\text { Eternal Motion } \\
\text { Requires an } \\
\text { eternal Mover, }
\end{array} \\
\text { An eternal substance must exist: }
\end{array}\right.} \\
& \text { He gives a clarification. } 94 \\
& \text { from the foregoing discussion. } 93
\end{aligned}
$$

Substances are the primary kinds of beings. If primary things are destroyed, none of the other remains. If substance is not etermal, it folLows that nothing is eternal because it is the primary kind of being. But this is impossible, because he has shown in book VIII of Physics that motion and time are eternals. 95

If time is not eternal, there would have to be a "before" and an "after" time". But this is impossible because time is nothing other than the measure of before and after in motion. Thus it would follow that time existed before it began to be and it will exist after it ceases to be. Therefore time is eternal. Motion is eternal, then, in the sense that time is; for time is either the same as motion or a property of it. Among local motion this is true only of circular motion, es is proven in book VIII of the Physics. 96

Therefore an eternal substance must exist.
Assuming then, that motion is eternal it is necessary to posit an eternal substance which is acurally moving or acting. The universals of Plato as such do not cause motion, for every active or motive principle is a singular thing. 97

The eternal movers must have an actuality as their essences, (this essence must be actual). Because if it is potential, it can possibly not be.

Hence it would be possible for the etermal substance not to be and it would be possible for motion not to be; and so it would not be necessary and eternal.

Therefore the essence of the eternal substances must be in actuality. 98
Such substances are imaterial. Because matter involves potentiality and they are actualities. 99

He has shown that there must be at least one eternal substance that is actual and immaterial. Later is explained the nature of this kind of substance and how it is the cause of motion. 100

After that consideration he goes on whether it is necessary to posit one eternal substance or more than one, and if the latter, how many. And he notes that the theory of Ideas makes no proper study of the problem; for the proponents of the Ideas say that they are numbers, and they speak of numbers sometimes as unlimited and sometimes as limited to the number ten. 101

He states that "there must be as many substances as there are motion of the starts, and that these substances are eternal in nature, essentially immovable and without magnitude. 102

And the reason that he gives is that the motion of the planets are eternal and that each of this motion mast also be caused by a substance which
is essentially immovable and eternal.
In resume he says that: a) simple local motion is caused by the First Imovable Substance, b) a planet's local motion is caused by many immovable substances (as many as planets).

Then he gives the opinion which the astronomers of his time held about the number of planetary motion: 1.- Eudoxus: "there will be 26 spheres" with their 26 unmoved movers". 103 2.- Callypus: for him the total number of spheres is 55.104

Aristotle makes the total number of spheres to be 47 "if one has not added to the moon and to the sum the motion which we have mentioned. 105 Any way the problem of whether they are one or many is not important to my particular inquiry. The main achievement in regard to my problem is that we have posed the necessity of an eternal substance beside the existence of sensible substances.

It is also necessary to note that the God of Aristotle is different to oun notion of the God of Christianism. Owens, dealing with the matter in The Doctrine of Being in the Aristotelian Metaphysics, says, "The notion of the divine issindependent of its unity or plurality. The fundamental unity of things becomes a problem of order not of dirivation... One is first, another is second and so on according to the order of stellar motions. "106

BOOK XIII $M$
In the beginning of this book, Aristotle restates aporia $E$ with all its implications:




Then he passes to consider that mathematical objects can not exist as distinct substances either in, or apart from sensible things. He shows that they can be separated on 7 y in thought. 108 Again in chapter six ${ }^{109}$ he gives various ways in which numbers may be considered as substances of things and continues the discussion of mathematicals through chapters seven and ten. And that is considered in detail by aporiae $U$ and $V$. In chapter four and five ${ }^{110}$ there is a consideration of the historical background of the Theory of Ideas. And I explained that when I considered book $I$. Then he mentions the fact that if there were Ideas they would not explain the changes in the sensible world.

I don't find necessity for going into a detailed report of book XIII, because I have dealt with the same consideration in anterior books in regard to the Ideas. And aporilae $V$ and $U$ consider the section in regard to Mathematicals.

I have found the answer to my problem in the first twelve books.

## BOOK XIV N

Here Aristotle deals with sensible and non-sensible substances under the aspect of "principles." There is not any direct reference to aporiae $E$ and F. It seems to me that books XIII and XIV are nothing else than a summary in a capsule form of anterior considerations.

## SUMMARY:

I have stated in the beginning of this work that in dealing with my question it is necessary to first consider what is said by others. In the historical background of the problem it is made evident that the ancient philosophers, known by the of Naturalists, were only concerdend with sensible substance. Two philosophical trends have posited other substances in addition to sensible. The Platonists who posited the separated species and the Intermediate Entities (between ideas and sensible things) and the Pythagoreans, who say that the Intermediate Entities are in sensible things.

Thay found by reason the necessity of other kinds of substances, because thay knew that "materiality" is not involverd necessarily in the notion of substance. And the reason that moved them to posit the ideas and the mathematicals are based on a wrong notion of abstraction. Because the intellect does not abstract in such a way that it understands forms and continuous quantities to exist without matter and motion.

And in particular, I have explained in my consideration of Book VII that the ideas or universals are not separate substances. The determination of the question about mathematicals is given by the treatment of aporiae $U$ and $V$ as I showed in the statement of the problem. And in my consideration of Book XII I have proved how an eternal substance must exist, using arguments form the eternity of motion and time.

In that way we show that there are other substances beside sensible substances; that those substances are eternal and inmobile, and the they belong to one genus of non-sensible substance. They are unique, and there are not many classes of non-sensible substances, as was claimend by the Pythagorians and the Platonist.

## BIBLIOGRAPHY:

Apostle, H.G., Aristotle's Philosoohy of Mathematics. Chicago: The University of Chicago Pres, 1959.

Aquinas, St. Thomas, Commentary on the Metaphysics of Aristotle. (Translated by John P. Rowan.) Chicago: Henry Regnery Company, 1961.
-----, In Dnodecim Libros Metaphzsicomm Aristotelis Expositio. Romae: Marietti, 1950.

Aristotle, The Basic Works of Aristotile (Metaphysics). Ed. by Richard McKeon, New York: Published by Randon House, 1941.
..... APIETOTEAOVE IA MEIA IA ITミIKA. (Commentary by W. D. Ross). Oxford: Claredon Press, 1924.

Collins, Enrique, Manual de Eilosofia Tomista. Vol. I. Traduccion de Cipriano Monserrat, Barcelona: Luis Gili, Editor, 1950.

Copleston, Frederich, A History of Philosophy. Gerden Gity, New York: Image Book.

Gilson Etienne, The Philosophy of St. Thomas Aquinas. St. Louis: Herder, 1939.

Henle, Robert J., Method in Metaphysics. Milwaukee: Marquette University Press, 1951.

Harper, Thomas' The Metaphysics ofthe Shon. Nel. III New York: Peter Srith, 1940.

McCall, Robert E., The Realjty versity of America Press, 1956.

Owens, Joseph, The Doctrine of Being in the Aristotilian Metaphysics. Toronto, Ganada: Pontifical Institute of Medieval Studies, 1951.

Regis, Anton G., Saint Thomas and the Greegs. The Aquinas Lecture, 1939. Milwaukee: Marquette University Press.

Platon, Dialogos. Universidad Nacional de Mejico. 1922.
Pro. Diego F., Estudios Eilosofisos. Universidad Nacional de Cuyo. 1944.

## FOOTNOTES:

1.-Aristotle. Metaphysics (APIETOTENY TA META I $Y \Sigma I K A$ ), Translation and Commentary by W.R. Roos, Oxford University Press (1924), $995^{\mathrm{b}} 13-995^{\mathrm{b}} 17$.
2.-Tمid., $1076^{\mathrm{a}} 10-1076^{\mathrm{a}} 15$.
3.-Tbid., $995^{\mathrm{b}} 15-995^{\mathrm{b}} 17$.
4.-Owens, Joseph. The Doctrine of Being in the Aristotelian Metaphysics. Institute of Medieval Studies. Toronto, Canada. (1951) p.129. "If the mathematicals are posited as separate, they gives rise to various aporiae".
5.-Aristotle. op.cit. $996^{\mathrm{a}}$ 13-996 14 .
6.-Ibid., $996^{\mathrm{a}} 14-996^{\mathrm{a}} 17$.
7.-Ibid., $995^{\text {b }} 13-995^{\text {b }} 14$.
8.-Tbid., $1026^{\mathrm{a}} 29-1064^{\mathrm{b}}$ 9.
9.-St. Thomas Aquinas. Gommentary on the Metaphysics of Aristotie. Henry Regnery Company, Chicago. (1961):2227.
10.-Ibid., 398.
11.-Tbia., 1170; 2158.
12.-Tbid., 1643 "quia per rationem invenetur quod oportet esse aliquas substancias incorruptibiles et incorporeas cum ratiosubstantiae corporalibus dimensionibus nonsit obligata".
13.-Aristotle. 0p. sit. $1076^{\mathrm{a}} 12$.
14.-Tbid., $938^{\text {b }} 7-938^{\text {b }} 9$.
15.-Thid., $989^{\text {b }} 30-989 \mathrm{~b} 33$.
16.-Tbid., $989^{\text {b }} 34$.
17.-Tbid., $990^{\mathrm{a}}$ 4 $990^{\mathrm{a}} 6$.
18.-Tbid., $987^{\mathrm{b}}$ 29.
19.-Ibid., $987^{\text {a }} 30-987 \mathrm{~b} 13$.
20.-Ibid., 1078 ${ }^{\text {b }} 10-1078^{\text {b }} 30$.
21.-Tbid. $987^{b} 14-987^{b} 17$.
22.-Ibid., 987万 28-987b30.
23.-Ibid., $997^{\mathrm{a}} 34-997^{\mathrm{b}} 2$.
24.-Tbide., $997^{\text {b }} 4$.
25.-7bid., $987^{b} 4-987^{b} 7$.
26.-Ibid., $997^{\text {b }} 9$ -
27.-Ibid., $997^{\text {b }} 13$.
28.-Ibid., $997^{\text {b }} 14-997^{\text {b }} 20$.
29.-Tbid.; $997^{\text {b }} 20-997^{\text {b }} 25$.
30.-Ibid., $997^{\text {b }} 25-997^{\text {b }} 30$.
31.-Tbid., $997^{\text {b }} 30-997^{\text {b }} 34$.
32.- Saint Thomas. Op. cit. 475.
33.-Aristotle. 0pocit. $997^{\mathrm{b}} 34-998^{\mathrm{a}} 8$.
34.-Tbid. 998 a 8-998 ${ }^{\mathrm{a}} 11$.
35.-Tbid., $998^{\mathrm{a}} 11-998^{\mathrm{a}} 13$.
36.-Ibid., $998^{\text {a }} 13$.
37.-Tbid., $998^{\text {a }} 14$.
38.-Tbid., $998^{a} 15-998^{a} 20$.
39.-Saint Thomas. Op. cit. 403
40.-Thid., 403.
41.-Thid., 422.

42;-Aristotle. Op. cit. $1044^{a} 1-1044^{a} 9$.
43.-Saint Thomas. Opocit. 542.
44.-Aristotle. 0n, ajt. $1017^{b} 10-1017^{b} 25$.
45.-Tbid., $1017^{\text {b }} 10-1017^{\text {b }} 14$.
46.-Toid. $1017^{\text {b }} 16$.
47.-Tbid., $1017^{\mathrm{b}} 16-1017^{\mathrm{b}} 21$.
48.-7B14., $1017^{\text {b }} 14-1017^{b} 25$.
49.-Tbia., $1017^{b} 21$.
50.-Tbid., $1017^{b} 22-1017^{b} 23$.
51.-Saint Thomas. Dp. cit. 904.
52.-Aristotle. 0n. cit. $1017^{\mathrm{b}} 23-1017^{\mathrm{b}} 25$.
53.-Skint Thomas. 0p. cit. 905.
54.-Aristotle. 0n. cit. $1026^{\mathrm{a}}$ 1-1026 ${ }^{\mathrm{a}} 7$.
55.-Thid., $1026^{\mathrm{a}} 7-1026^{\mathrm{a}} 10$.
56.-Owens. Op, cjt. p. 129.
57.-Aristotle. Op.Cit. $1026^{\mathrm{a}} 26-1026^{\mathrm{a}} 30$.
58.-Ibid., 1028 ${ }^{\text {a }}$ 10-1028a 30.
59.-Thid., $1028^{\mathrm{a}} 30-1029^{\mathrm{b}} 11$.
60.-Thid., 1029b 12.
61.-Ibid., 1029 ${ }^{\text {a }} 35$.
62.-7bid., 1029b 12-1038b $1_{6}$.
63.-Ibid., $1038^{\text {b }} 10-1038^{b} 15$.
64.-Ibid., $1038^{\mathrm{b}} 16-1039^{\mathrm{a}} 24$.
65.-Ibid., $1039^{\mathrm{a}} 24-1040^{\mathrm{b}} 4$.
66.-Ibid., $1040^{\mathrm{b}} 5-1040^{\mathrm{b}} 25$.
67.-Ibid., $1040^{b} 25-1041^{a} 5$.
68.-Ibid., $1038^{b} 1-1038^{b}$ 5. See the differences between particular and universal substances in my treatment of Book $V$.
69.-Tbid., $1038^{\text {b }} 5-1038^{b} 18$.
70.-Ibid., $1038^{6}$ 15-1038 20.
71.-Tbid., $1038^{\text {b }} 20-1039^{a} 30$.
72.-Tbid., $1038^{\mathrm{a}} 30-1038^{\mathrm{a}} 34$.
73.-Tbid., 1041 ${ }^{\text {a }} 8-1041^{2} 10$.
74.-See the section "The Statement of the Problem" page 3.
75.-Aristotle. 0n. sit. $1042^{\text {a }} 7-1042^{a} 8$.
76.-Saint Thomas. 00p. cit. 405 and 422.
77.-Aristotle. On. cit. $1042^{2} 12-1042^{\mathrm{a}} 16$.
78.-Tbid., $1049^{\mathrm{b}} 4-1050^{\mathrm{b}} 6$.
79.-Ibid., $1050^{\mathrm{b}} 6-1050^{\mathrm{b}} 8$.
80.-Reference to Aporia $R$
81.-Aristotle. On, cit. 1054 ${ }^{\text {a }} 15-1054^{\text {a }}$ 19.
82.-Saint Thomas. Op. sit. 2153.
83.-Tbid., 2159.
84.-Aristotle. 0p. cit. $1060^{\mathrm{a}} 3-1060^{\mathrm{b}} 3$.
85.-Saint Thomas. On. cit. 2189.
86.-Aristotle. On. cit. $1060^{a} 35-1060^{a} 38$.
87.-Ibid., $1069^{a} 30-1069^{a} 32$.
88.-Ibid., 1069 $32-1069^{\mathrm{a}} 1$.
89.-Tbid., $1069^{\text {b }} 1-1069^{\mathrm{b}} 8$.
90.-Ibid., $1069^{\mathrm{b}} 8-107^{\mathrm{b}} 2$.
91.-Tbid., $1071^{\text {b }} 3-1072^{\mathrm{a}} 26$.
92.-Ibid., $1071^{\text {b }} 3-1077^{b} 22$.
93.-Tbide, 1071 ${ }^{\text {b }} 22-1072^{\mathrm{a}} 1$.
94.-Ibid., $1072^{\mathrm{a}} 1-1072^{\mathrm{a}} 26$.
95.-Ibid., $1071^{a} 7-1071^{a} 6$.
96.-Tbid., $1071^{\text {a }} 8-1071^{\text {a }} 9$. 97.-Tbid., $1071^{\text {a }} 10-\%$
98.-Ibid., $1071^{a}$ 12-1071 ${ }^{\text {a }} 20$. 99.-Ibid., $1071^{\mathrm{b}} 20-1071^{\mathrm{b}} 22$. 100.-Tbid., $1071^{\mathrm{b}} 22-1073^{\mathrm{a}} 14$. 101.-Tboid., $1073^{\mathrm{a}} 15-1073^{\mathrm{a}} 23$. 102.-Ibid., $1073^{\mathrm{a}} 25-1073^{\mathrm{a}} 27$. 103.-Ibid., $1073^{\text {b }} 18-1073^{\text {b }} 25$. 104.-Ibid., 1073b 31-1073 36. 105.-Tbjd., $1074^{\text {a }} 10-1074^{\mathrm{a}} 13$. 106.- Owens. 0p. sit. pp. 281-282 107.-Aristotle. 0n. ait. $1076^{\mathrm{a}} 10-1076^{\mathrm{a}} 16$. 108.-Ibid., 1076 ${ }^{\text {a }}$ 35-1078a 1. 109., Ibid., $1080^{\mathrm{a}} 12-1080^{\mathrm{b}} 35$. 110.-Ibid., 1078b 5-1080a 10.

