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Studies on Being in Aristotle's *Metaphysics* Beta

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'If I have seen further it is by standing on the shoulders of giants.'
-Sir Isaac Newton

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Abstract

In Book Beta of the *Metaphysics*, Aristotle presents fifteen aporias, or puzzles, whose subject matter is centered on fundamental and foundational issues in first philosophy. This study analyzes the subject matter and it presents Aristotelian solutions to the first five aporias to appear in Book Beta. The first four aporias deal with puzzles concerning the possibility of there being a science called *prôtê philosophia*, or, first philosophy, and the fifth aporia deals with a fundamental puzzle within metaphysics. Considered as a group, the first five aporias serve as an introduction to the science of being *qua* being, and in conjunction with their solutions function in a preliminary sense and a preparatory sense for the remaining aporias that are presented in *Metaphysics*, Book Beta. The solutions to the aporias also function as evidentiary support for the claim that the *Metaphysics* is a philosophical unity. This is because it is Aristotle's task within the *Metaphysics* to address the puzzles presented in Book Beta and to offer reasonable solutions. All of the solutions to the five aporias analyzed are found directly within the *Metaphysics*, with the partial exception to the second solution to the fifth aporia, where it is necessary to refer to passages in the *Physics* and *De Anima* for perspective and an introduction to hylomorphism as it relates to both matter and the soul.

This study is philosophical and historical, and claims that the solutions to the first five aporias are based on considering the puzzles from an ontological context. The first aporia raises the issue of whether it is the duty of one science or more than one science to investigate all the kinds of causes. Through an analysis of *Metaphysics*, Book Gamma and Book Epsilon Aristotle states that it is indeed the duty of one science, the most universal and general science, *prôtê philosophia*, to investigate all the kinds of causes. The second aporia raises the issue of whether it belongs to one science or more than one science to study the principles of demonstration. Through a complete analysis of *Metaphysics* Book Gamma it is ascertained that it is indeed the duty of one science, *prôtê philosophia*, to study both the ultimate principles of being and the principles of demonstration. The third aporia raises the issue of whether it belongs to just one single science or more than one science to investigate all substances and their attributes. Aristotle's solution to this puzzle is found in *Metaphysics*, Book Gamma, chapters two and three and is based on his classification of *prôtê philosophia* and the division of the study of philosophy into its respective branches. The branches investigate being as it is related to that specific

subject matter, yet all the branches are divisions within the unified study of philosophy. The fourth aporia raises the issue of whether the proper subject of *prôtê philosophia* is substance only, or also the essential attributes of substance. Aristotle's solution is found in *Metaphysics*, Book Gamma, chapter two, and is based on his notion that *prôtê philosophia* is the most general investigation into substance, and as so, indeed also studies its essential attributes. The fifth aporia raises a fundamental and foundational issue within the study of *prôtê philosophia* by examining the puzzle of whether only sense-perceptible things exist, or in addition to these, also non-sense-perceptible things exist. This study claims that there exists a tripartite set of solutions that resolve this puzzle. First, Aristotle criticizes and rejects the Platonic theory of Forms in *Metaphysics* Book Alpha chapters six and nine. Secondly, Aristotle raises the theory of hylomorphism that explains generation in the sense-perceptible world without the need for separate, and causally empty Forms. Aristotle's presentation of the theory of hylomorphism is analyzed from passages in *Physics*, Book II, chapters two and three, *De Anima*, Book II, chapter one, and *Metaphysics*, Book Zeta, chapters one, seven, eight, and nine. The third solution to this puzzle is the positing of the Unmoved Mover in *Metaphysics* Book Lambda chapters one, six, seven, nine, and ten. The positing of the Unmoved Mover and *nous* affirms that indeed non-sense-perceptible substances exist.

There has been a renewed interest in the study of the aporias in *Metaphysics*, Book Beta, in recent years, and perhaps this study will serve as a lucid introduction to the ontologically significant issues that are raised within the first five puzzles.

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Part One

Introduction to the Study of the Science of Being *qua* Being Through the Metaphysical Puzzles of Book Beta

Chapter One

I. Introduction to the Present Study

Aristotle's initial approach to the study of first philosophy in the *Metaphysics* is grounded in the exposition of metaphysical puzzles, or difficulties. Book Beta of the *Metaphysics* introduces the aporetic method and fifteen aporiai, or aporias, that Aristotle presents as fundamental metaphysical puzzles whose solutions are found within the remainder of the treatise and other works. The first four aporiai address puzzles related to the possibility of there existing a science of being *qua* being, and the fifth aporia raises fundamental issues within *prôtê philosophia*, and therefore taken as a whole provide a passageway into an investigation of metaphysics. The methodological investigation of the content of the first five aporiai is a way towards gaining wisdom, *sophia*, in first philosophy, for the resolution of these puzzles leads to a dissolution of wonder concerning those metaphysical puzzles. It will be shown that this inquiry into metaphysical puzzles as presented in Book Beta is a legitimate starting point for an investigation into first philosophy. In particular, the first five aporiai serve as a set of fundamental puzzles that initiate a study into metaphysics. There is an immediate search at

the outset of Aristotle's investigations based on aporias in Book Beta to define what the first principles of *prôtê philosophia* truly are, and this search leads to solutions that are grounded logically and ontologically. One aim of this research is to show how Aristotle's use of the aporetic method is the defining motive for searching for the knowledge of the causes and the principles which leads to wisdom on the subject concerning first philosophy. The second goal of this research is to show how Aristotle solved the first five aporiai within the *Metaphysics* and other treatises. The third goal of this research is to present support for a unitary reading of the *Metaphysics*, based on evidence gained through investigations into the first five aporiai as presented in Book Beta. In the analysis of the fifth aporia this thesis will present a tripartite set of solutions to that puzzle that is based on Aristotle's own scientific investigations into the sensible world that are found throughout his *corpus*. Aristotle was a philosopher and a natural scientist, and he carried out extensive research into things that are found in the natural world, and created knowledge from such observations and findings, and in turn from those laws of nature and observations of the empirical world draws conclusions concerning necessary conditions of nature that apply to and actually necessitate the existence of non-sensible substances. Aristotle's solutions to the fifth aporia take account of the sensible world, the laws of nature, and the necessary conditions for existence.

II. The History of Aporia in Ancient Greek Thought

Before initiating an investigation into the first five particular aporias that will be analyzed in *Metaphysics* Book Beta, it would be helpful to define precisely what is meant by aporia. The use of aporia is found in ancient Greek philosophy, mainly in the Platonic dialogues and in Aristotle. The word aporia, in ancient Greek, is defined as a 'difficulty, an embarrassment, a hesitation, or a perplexity.'¹ In ancient Greek philosophy, aporia means a puzzle or a state of puzzlement. A problem that presents itself with more than one possible answer, or appears insoluble, is called an aporia². Aristotle characterizes aporia in a certain context of a Topos as follows:

...perplexity (aporia) is not an attribute of opposite reasonings....Moreover, people who define in this way put effect for cause, or cause for effect. Likewise also an equality between contrary reasonings would seem to be a cause of perplexity; for it is when we reflect on both sides of a question and find everything alike to be in keeping with either course that we are perplexed which of the two we are to do. (*Topics*, VI. 145^b5-20.)

Politis shows that Aristotle has two distinct characteristics of aporia in the above passage.

- (1) aporia in the sense of the mental state of puzzlement and perplexity;
- and

(2) *aporia* in the sense of particular puzzles and problems which, he says, are responsible for and the cause of the mental state of *aporia*.³

Politis argues that for Aristotle, the first characteristic is primary, and the second characteristic is excogitated, or elicited from the first.⁴ It is this state of puzzlement, then, that leads us to define a question, problem, or sets thereof, as *aporia*. We can see from the above passage in the *Topics* that for a question or problem to be considered an *aporia* it must meet certain criteria. First, the question itself must cause a state of puzzlement. Second, there must be two equally plausible solutions to the question. And third, the two equally plausible solutions will lead us to a state of being unable to choose which solution is correct. Therefore, the puzzlement of the question leads us to define the question as *aporia*, and the plausible solutions themselves lead us even deeper into a state of puzzlement because as reasonable solutions they are pulling us in equally divergent directions. The following examples will clarify the above characteristics of *aporia*.

In Plato's *Charmides*, Socrates engages in a conversation concerning the meaning of *sophrosyne*, or temperance. Early in the dialogue Socrates asks Charmides whether or not he has the quality of temperance. (*Charmides*, 158.) The question itself causes a state of puzzlement in Charmides and he is unable to answer:

“...he then said very ingenuously, that he really could not at once answer, either yes, or no, to the question which I had asked: For,

said he, if I affirm that I am not temperate, that would be a strange thing for me to say of myself, and also I should give the lie to Critias, and many others who think as he tells you, that I am temperate: but, on the other hand, if I say that I am, I shall have to praise myself, which would be ill manners; and therefore I do not know how to answer you.” (*Charmides*, 159.)⁵

The question, “Do you have or have not the quality of temperance?” cannot be answered by Charmides because of the equality of contrary reasonings that he puts forth as possible answers. If Charmides were to say that he wasn’t temperate, it would go against the opinions others have of him, including Critias. It would also be a strange thing to say such a thing about himself. On the other hand, however, to say that he is temperate would be a type of self-praise, which Charmides recognizes as impolite. These two contradictory, yet plausible answers, place Charmides in a state of puzzlement. Charmides’ *aporia*, however, can be characterized as puzzlement concerning proper action in a social situation, not actual intellectual puzzlement. Charmides is puzzled because of how others will regard him depending on how he answers the question. If he answers one way, he would be disregarding the opinions of others, if he answers another way, he would be considered impolite. The question concerning temperance creates puzzlement in Charmides not concerning the definition of temperance, but concerning the proper response within the context of the social situation. In the next example from Plato we will examine a case of *aporia* that satisfies Aristotle’s characterization of *aporia*. As we can see from the preceding passage

from the *Charmides*, the second sense of aporia, i.e., the puzzle itself, is responsible for the first sense of aporia, i.e., the state of puzzlement.

Plato's *Meno* is a dialogue that seeks to determine the definition of virtue, or *arête*. In the dialogue, Socrates is interested in a definition of virtue in general, which can be applied to all other virtues. This discussion concerning virtue leads to an aporia initially presented by Meno.

Meno. "And how will you enquire, Socrates, into that which you do not know? What will you put forth as the subject of enquiry? And if you find what you want, how will you ever know that this is the thing which you did not know?"

Socrates. "I know, Meno, what you mean; but just see what a tiresome dispute you are introducing. You argue that a man cannot enquire either about that which he knows, or about that which he does not know; for if he knows, he has no need to enquire; and if not, he cannot; for he does not know the very subject about which he is to enquire. (*Meno*, 80.)

The general question posed by Meno, "How is searching for knowledge possible?" is today known as Meno's paradox. One side of the problem is as follows: if one does not know what one is searching for, how is it possible to search for it? The other side to Meno's paradox concerns the discovery of knowledge. How can one know that he has arrived at the truth of something if one doesn't already know the truth about something? This aporia clearly reflects Aristotle's characterization of aporia. The questions posed by Meno to Socrates concerning the search for knowledge create a mental state of puzzlement. Socrates considers two equally plausible situations: "a man cannot enquire either about that which he knows, or about that which he does not know; for if

he knows, he has not need to enquire; and if not, he cannot; for he does not know the very subject about which he is to enquire.” (*Meno*, 80.) This leads to the conclusion that inquiry is impossible and we are left in a state of aporia. Plato’s solution to this aporia is to introduce the theory of recollection.

The next question to be considered is how can a set of aporiai be considered as a proper passageway for investigation in the *Metaphysics*? This question must be answered before attempting to solve the puzzles because if it is not a methodology, per se, but just a set of random questions, then the continuity of the entire *Metaphysics* and Beta’s role and relation to it must be called into question.

The answer to the above question can be found by considering *Metaphysics* to be a whole, related work, and not as a set of separate works unrelated to each other and randomly grouped together by a later editor. Although it may somewhat be the case that the books were written separately and later combined by an editor who called the collected work *Metaphysics* because it came after *Physics*, there is a continuity apparent throughout the treatise. This continuity is the systematic solution of the fifteen aporiai that are presented in Book Beta, and as such, Book Beta’s contents are the presentation of a methodology, the aporetic method, which for Aristotle employs as the way to not only solve the puzzles, but to expand on the answers and to apply his metaphysical doctrine to those puzzles throughout the entire work. Aristotle’s *Metaphysics* has been analyzed throughout history by

the way of mainly two distinct traditions. One approach, which dominated 20th century interpretations of Aristotle, is called the historic-genetic interpretation. This approach is attributed to Jaeger⁶, and states that there are distinct early, middle, and later periods of development within Aristotle's thought. Through this interpretation, it is thought that during the early period Aristotle accepts Plato's theory of forms, rejects them during the middle period and that during the later period he fully developed his tools of thought which led him to empirical and philosophical investigations which yielded the bulk of his treatises. The other interpretation is called the unitary interpretation, or, according to Reale⁷ the systematic-unitary interpretation. This was the traditional manner of interpreting Aristotle's works, until Jaeger's famous book, *Aristotle, The Fundamentals of the History of his Development*, was published in the early 20th century. The unitary interpretation supports the idea that Aristotle had a singular, complete, and fully developed understanding of the metaphysical doctrine found within the treatise. Although it may be argued that the *Metaphysics* may or may not be a literary unity, and that the fourteen books of the *Metaphysics* were written in different stages, it is clear that the *Metaphysics* contains a philosophical unity coupled with a methodological unity of confronting fundamental puzzles, or aporia, that are solved throughout the entire treatise. This unitary interpretation does not deny that Aristotle's thought developed throughout his life. Undoubtedly, Aristotle's philosophical views matured from his younger years when he was a student of Plato to

later when he founded the Lyceum and conducted empirical research into biological organisms and their systems. However, through a close reading of the *Metaphysics*, it is clear that even if the fourteen books of the *Metaphysics* were written over varying periods of Aristotle's life, the treatise itself is a singular work that encompasses fully developed ideas pertaining to first philosophy. The fourteen books are united by a fully developed and systematic approach to the puzzles and metaphysical analysis contained within.

III. Reading Beta as a Passageway into *Metaphysics*

This paper supports a unitary reading of the *Metaphysics*. Although the main objective of this paper is to show that Aristotle's approach to metaphysics is grounded in a necessary investigation of the puzzles found in Book Beta, which reveals the subject matter of *prôtê philosophia* to be substance, the study of being *qua* being, the causes and first principles, including the principle of non-contradiction; a secondary goal is to support the unitary interpretation. Such an interpretation's support is found through solving the aporiai, or puzzles, in Book Beta. The scope of this paper is limited to the initial five aporiai found in Book Beta and their various solutions which are discovered throughout the *Metaphysics* and other treatises, however, further investigations into Book Beta will reveal further support for a unitary reading of the *Metaphysics*.

Book Beta of the *Metaphysics* contains fifteen aporiai, or puzzles, that serve as a passageway into the study of metaphysics. The investigation and search for solutions of these puzzles is called the aporetic method. Aristotle employs this methodology in the *Metaphysics* as a way for 1) searching for an understanding of and solutions to the various puzzles that arise when initiating a study into first philosophy 2) proving that first philosophy, i.e., the study of being *qua* being, is a tenable and legitimate science 3) setting the groundwork for a study into first philosophy by delineating the contents of the subject of investigation in first philosophy and by 4) showing the necessary first principles of such an investigation. Although some may argue that such a preliminary exposition of metaphysical puzzles isn't necessary, Aristotle thinks otherwise:

For those who wish to get clear of difficulties it is advantageous to state the difficulties well; for the subsequent free play of thought implies the solution of the previous difficulties, and it is not possible to untie a knot which one does not know. But the difficulty of our thinking points to a knot in the object; for in so far as our thought is in difficulties, it is in like case with those who are tied up; for in either case it is impossible to go forward. Therefore one should have surveyed all the difficulties beforehand, both for the reasons we have stated and because people who inquire without first stating the difficulties are like those who do not know where they have to go; besides, a man does not otherwise know even whether he has found what he is looking for or not; for the end is not clear to such a man, while to him who has first discussed the difficulties it is clear. (*Metaphysics*, Book Beta, 995^a27-995^b2)

Aristotle states several important points in the above passage concerning aporias, their place in the search for knowledge concerning first

philosophy, and the aporetic method itself. First, in order to solve any puzzles in metaphysics we need to figure out what those puzzles are. This point may seem obvious, but Aristotle states it because without a goal in defining the solution we can't be sure what our explanations are intended for. When solutions to an aporia are resolved, it is then possible to advance onwards and confront other puzzles, and gain wisdom in first philosophy, as opposed to puzzlement, confusion, and incomprehension. Aristotle likens such a puzzle to a knot, both mental and physical, which prevents us from any progress, or movement towards a goal of dissolving wonder concerning certain puzzles within thought. The aporetic method also serves as a guide map and entry point, into first philosophy. This map acts like no other maps, though. It also tells us exactly where we need to start at for our investigations into first philosophy. One location point for entry into first philosophy, according to the aporetic method, is searching for and defining first principles. The first four of the fifteen aporias deal with puzzles concerning the possibility of the science of being, and the remainders deal with certain puzzles within the science of being itself. Aporias also point us in the direction towards a final goal regarding investigations into first philosophy. Investigating and solving the aporias create clarity concerning the first principles of first philosophy and further studies into its subject matter. This passage shows the priority of understanding the aporiai of first philosophy. If progress is to be made in the study of metaphysics, one must untie a knot, or knots, and here the knots are metaphysical puzzles. If these metaphysical

puzzles are unknown, the solutions will remain unknown as well. For to be in puzzlement no progress or movement forward can be made, just like a person that is tied up cannot move. Such puzzles are helpful because in addition to showing problems related to first philosophy, the solutions of these puzzles allow for progress in philosophical thinking and therefore such an investigation is what actually facilitates a study in first philosophy. A systematic study into first philosophy must first start by understanding that there are metaphysical puzzles to be solved. For if no puzzles exist, an investigation is not necessary. Further, if there is no puzzlement, one will not be inclined to investigate at all.

The use of aporia is found throughout the Platonic dialogues. Many of the dialogues end in a state of aporia, a state of puzzlement, without any resolution or substantive conclusion. Plato's use of aporia encourages the reader to philosophize and draw possible conclusions concerning the philosophical puzzle presented in the dialogue. By ending the dialogue in aporia Plato expands his use of the Socratic method by extending it directly to the reader. By ending the dialogue without a resolution to the puzzle he leaves the reader in a state of puzzlement, which, as Aristotle suggests, leaves us unable to untie that mental knot.

The Socratic method is generally regarded as a series of questions presented to the student in which the teacher never gives answers. This is how Socrates is presented in the early dialogues. Through reflection and memory the student realizes the answers. The

aporias at the end of the Platonic dialogues are Socratic in nature because as philosophical puzzles the reader must individually reflect and reach his own decision. Plato's aporetic conclusions are examples of the Socratic method used on the reader. Aristotle's use of aporia is quite different from Plato. Aristotle's utilization of the aporetic method in the *Metaphysics* is used to not only induce a state of puzzlement, but, eventually, to also solve all the metaphysical puzzles in Book Beta in order to "get clear of the difficulties" and to be "in a better position for judging" "the science we are seeking."⁸ The fifteen aporiai are presented in the *Metaphysics* at the beginning of the treatise, not at the end, because Aristotle wants to untie those mental puzzles and be free from a state of metaphysical puzzlement concerning the fifteen aporias presented in Book Beta. Therefore it is necessary for Aristotle to begin with the presentation of the aporiai in Book Beta, for the entire metaphysical project, the search for and investigations into the science of being *qua* being, rests upon the dissolution of those fifteen puzzles. It is to these fifteen puzzles and the search for the solutions to those puzzles that Aristotle dedicates the remainder of the *Metaphysics*.

Before proceeding to the aporiai we should consider what the origin of those puzzles are. One possible origin of the puzzles is that they are the conflicting opinions of his predecessors. For it is true, that when raising a problem Aristotle discusses the opinions of preceding Greek philosophers.⁹ This is called the dialectical method, in which such

reputable opinions are discussed and prepare a way for an original solution which is superior to the original opinions.

While such a view may be applied to some of the *aporiai*, it does not apply to all of them, and an individual opinion, or, *endoxa*, does not give rise to an *aporia*. The combination of opinions from the Presocratics and Plato may show differing approaches to the solution to a particular puzzle, but that does not necessarily mean that it is those opinions that give rise to the puzzles. On the other hand, it is the puzzles themselves when discovered during the contemplation of metaphysics that originally created an impetus for the earlier thinkers to write about such puzzles. The earlier thinkers who engaged in metaphysical thinking attempted to answer certain puzzles and these answers, or opinions, remain today mainly as fragments. The *aporias* were never presented as systematically as in Book Beta before Aristotle, but it must be said that the *aporias* surely gave rise to the *endoxa*, and not the other way around.

Aristotle does indeed employ the dialectical approach when raising the *endoxa* of the earlier thinkers, but he does so in order to illustrate particular *aporia*, and how they were confronted in the past. This dialectical approach, or *endoxic* method, does not mean, however, that the opinions of the earlier thinkers are the origin of the *aporia*. Only by thinking about metaphysics do *aporias* arise. This point is made clear in the following passage: "But the difficulty of our thinking points to a knot in the object..."(*Metaphysics*, Book Beta, 995^a30.) The knot is located in

the object of thought, the metaphysical problem, and not in any opinions that are used to illustrate the historical importance of the puzzle.

Aristotle illustrates in his discussion of first philosophy that the puzzlement itself that accompanies wonder in relation to philosophical issues can yield *epistêmê*. Such a claim is presented in *Metaphysics*, Book Alpha, Ch. 2:

That it is not a science of production is clear even from the history of the earliest philosophers. For it is owing to their wonder that men both now begin and at first began to philosophize; they wondered originally at the obvious difficulties, then advanced little by little and stated difficulties about the greater matters, e.g. about the phenomena of the moon and those of the sun and the stars, and about the genesis of the universe. And a man who is puzzled and wonders thinks himself ignorant (whence even the lover of myth is in a sense a lover of wisdom, for myth is composed of wonders); therefore since they philosophized in order to escape from ignorance, evidently were pursuing science in order to know, and not for any utilitarian end. And this is confirmed by the facts; for it was when almost all the necessities of life and the things that make for comfort and recreation were present, that such knowledge began to be sought. Evidently then we do not seek it for the sake of any other advantage; but as the man is free, we say, who exists for himself and not for another, so we pursue this as the only free science, for it alone exists. (*Metaphysics*, Book Alpha, 982^b11-27.)

In the above passage Aristotle states several important points that are related to the nature of philosophizing and the puzzlement that accompanies wonder. First, it is important to stress that philosophy is not one of the productive sciences. This issue will be examined in length in the chapters on the first and second aporias. Philosophy emerged in ancient Greece as the study of the nature and the beginnings of things, and as such, was not concerned originally with any practical or productive results. The earliest philosophers philosophized as a

consequence of their puzzlement and wonder, and gained *epistêmê* as a result of such philosophizing. The result of gaining such *epistêmê*, however, was never intended for any other applications, even though such results were achieved through science. Aristotle aptly captures the nature of philosophy by describing it as the only truly free science, '*hūtō kai autēn hōs monēn eleutheran tōn epistēmōn.*' (*Metaphysics*, Book Alpha 982^b26-27.) Philosophy is the only truly free science in the sense that the knowledge obtained through an investigation into this science is pursued for its own sake, i.e. philosophical knowledge is not dependent upon any principles from another science, nor does such knowledge exist for any secondary or tertiary purposes. Therefore the study of philosophy holds a special status amongst all of the sciences: it is primary and superior to all of the particular sciences in the sense that the knowledge that its investigations produce does not depend upon nor necessarily exist for any of those particular sciences, and therefore philosophy is the most free.

In this thesis it will be shown that an investigation into particular metaphysical puzzles, in addition to the puzzlement and wonder that Aristotle discusses in *Metaphysics* Book Alpha, is indeed a legitimate approach to first philosophy because such an investigation structured around said puzzles and puzzlement does result in *epistêmê*.

IV. List of the Fifteen Aporias

The First Aporia: (996^a18-996^b26) Does it belong to one science or to more than one science to investigate all the kinds of causes?

The Second Aporia: (996^b26-997^a15) Does it belong to one science or to more than one science to study of the principles of demonstration?

The Third Aporia: (997^a15-25) Does it belong to just one single science or more than one science to investigate all substances and their attributes?

The Fourth Aporia: (997^a26-33) Is the proper subject of our investigation substance only, or also the essential attributes of substance?

The Fifth Aporia: (997^a34-998^a19) Do only sense-perceptible things exist, or in addition to these, do non-sense-perceptible things also exist?

The Sixth Aporia: (998^a20-998^b13) Are the first principles of things genera, or are they the material, primary constituents of things?

The Seventh Aporia: (998^b14-999^a23) Are the first principles the highest genera or the lowest genera?

The Eighth Aporia: (999^a24-999^b24) How is it possible to have scientific knowledge if the world is made up only of individual things?

The Ninth Aporia: (999^b24-1000^a4) Are the first principles one in kind or numerically one?

The Tenth Aporia: (1000^a5-1001^a3) Are the principles of perishable things the same as those of imperishable things or not?

The Eleventh Aporia: (1001^a4-1001^b25) Are unity and being the substance of things or are they not?

The Twelfth Aporia: (1001^b26-1002^b11) Are number and geometrical bodies substances or are they not?

The Thirteenth Aporia: (1002^b12-32) In addition to perceptible things and intermediates, why is it necessary to search for things such as Forms?

The Fourteenth Aporia: (1002^b32-1003^a5) Do the elements of things have being in potentiality or actuality?

The Fifteenth Aporia: (1003^a5-17) Are the principles universals or particulars?

Part Two

Puzzles Concerning the Possibility of the Existence of the Science of Being *qua* Being

Chapter Two

I. Introduction and Presentation of the First Aporia in *Metaphysics* Book Beta, Ch. 2

First Aporia: (996^a18-996^b26) Does it belong to one or to more sciences to investigate all the kinds of causes?

Aristotle introduces the first aporia at the beginning of chapter two in Book Beta as follows:

First then with regard to what we mentioned first, does it belong to one or to more sciences to investigate all the kinds of causes? How could it belong to one science to know the principles if these are not contrary? Further, there are many things to which not all the principles pertain. For how can a principle of change or the nature of the good be present in unchangeable things, since everything that in itself and by its own nature is good is an end, and a cause in the sense that for its sake the other things both come to be and are, and since an end or purpose is the end of some action, and all actions imply change; so that in unchangeable things this principle could not exist nor could there be a good-in-itself. This is why in mathematics nothing is proved by means of this kind of cause, nor is there any demonstration of this kind-‘because it is better, or worse’; indeed no one even mentions anything of the kind. (*Metaphysics*, Book Beta, 996^a18-31.)

This aporia arises because the causes differ greatly from each other in the explanation of things. Causes explain things in the world, and if we can have a science of causes, we can have certain knowledge of why things are as they are in the world. If there is one single science of the causes, then how is it possible for there to be a single science of the causes to embrace principles that are not even the opposites of one another? Moreover, such principles do not apply to all things in every instance. An example Aristotle uses is in the case of unchangeable things. It would not be possible to discover the principle of change or the nature of the good in unchangeable things because these things do not partake in unchangeable things and therefore it would not be possible to have a single science of the four causes if explanation and knowledge could not be acquired in each and every case. Mathematics is the perfect example that supports this thesis. Mathematical answers are shown as proofs but no proofs depend on a part of it or all of it being better or worse. Other skills, however, such as carpentry or cobbling, are judged by being called better or worse, for skill rests upon the ability to do something well. Such a judgment, however, is never made in mathematics, for skill in mathematics rests only in the ability to show a proof correctly, and therefore it seems not possible to have a single science of the four causes because explanation and knowledge would not be universal and singular.

On the other hand, how are we to determine which science holds the greatest amount of knowledge concerning a thing if there are several

sciences of the causes? Aristotle posits the contrary side of this aporia as follows:

But if there are several sciences of the causes, and a different science for each different principle, which of these sciences should be said to be that which we seek, or which of the people who possess them has the most scientific knowledge of the object in question? The same thing may have all the kinds of causes, e.g. the moving cause of a house is the art or the builder, the final cause is the function it fulfils, the matter is earth and stones, and the form is the definitory formula. To judge from our previous discussion of the question which of the sciences should be called wisdom, there is reason for applying the name to each of them. For inasmuch as it is most architectonic and authoritative and the other sciences, like slave-women, may not even contradict it, the science of the *end* and of the *good* is of the nature of wisdom (for the other things are for the sake of the end.) But inasmuch as it was described as dealing with the first causes and that which is in the highest sense knowable, the science of *substance* must be of the nature of wisdom. (*Metaphysics*, Book Beta 996^b1-14.)

All four causes may be called wisdom if they explain the same thing, such as the construction of a house. The four causes all provide a specific type of knowledge that allows one to know what a thing is, and what characters a thing possesses. With such knowledge we can know about a thing better than one who only knows what characteristics a thing possesses. We know what a thing is when we think we have knowledge of that thing. Each cause provides a different type of knowledge and therefore it seems as if each cause belonged to a different science and therefore each cause should be investigated separately.

In order to confront this aporia as Aristotle did, we must first investigate Aristotle's theory of causality, known as the doctrine of the four causes, and show what he means by a cause, and how a causal investigation results in knowledge. In the *Physics* Book II, chapter three,

Aristotle presents his theory of the four causes. The four causes answer the “why” question by providing us with knowledge about things that require an explanation. The four causes are presented in the following passage:

In one way, then, that out of which a thing comes to be and which persists is called a cause, e.g. the bronze of the statue, the silver of the bowl, and the genera of which the bronze and the silver are species.

In another way, the form or the archetype, i.e. the definition of the essence, and its genera, are called causes (e.g. of the octave the relation of 2:1, and generally number), and the parts in the definition.

Again, the primary source of the change or rest; e.g. the man who deliberated is a cause, the father is cause of the child, and generally what makes of what is made and what changes of what is changed.

Again, in the sense of end or that for the sake of which a thing is done, e.g. health is the cause of walking about. (‘Why is he walking about?’ We say: ‘To be healthy’, and, having said that, we think we have assigned the cause.) The same is true also of all the intermediate steps which are brought about through the action of something else as means towards the end, e.g. reduction of flesh, purging, drugs, or surgical instruments are means towards health. All these things are for the sake of the end, though they differ from one another in that some are activities, others instruments. (*Physics* Book II, Chapter 3, 194^b24-195^a3.)

We have, therefore, the doctrine of the four causes. The four causes presented above are:

- The material cause: “that out of which,” e.g., the bronze out of which a statue is made.

- The formal cause: “the form, the definition of the essence,” e.g., the shape of the statue.

- The efficient cause: “the primary source of the change or rest,”
e.g., the builder, the father of a child.

- The final cause: “the end, or that for the sake of which a thing is done.”

All four causes may provide knowledge in the explanation of something, including artistic production and human action. Let us consider the craftsmanship of a house as an example of artistic production. The wood provides the explanation to the question “From what is the house produced?” and is therefore the material cause. The wood used for the production of the house is also cut, shaped, and hammered according to the design of the house. Once this craftsmanship upon the wood creates the shape of the house, this shape is the formal cause. The master craftsman, who produces the house, is the primary source of change or rest in relation to the house, and is therefore the efficient cause. The house itself is that for the sake of which the craftsmanship was done, and is therefore the final cause. Each of the four causes introduced by the above passage provides knowledge in the explanation of why a house is being built. The material cause answers the question: From what is the house produced? The formal cause answers the question: What is the form of the house? The efficient cause answers the question: What is the primary source of change or rest in the building of the house? The final cause answers the

question: What is the end or that for the sake of which this house building is being done?

Four separate causes provide four separate reasons that do not seem to be related to each other. That is why Aristotle had to confront this aporia first.

II.1 Solutions to the First Aporia in *Metaphysics*, Book Gamma, Ch. 1, & *Metaphysics*, Book Epsilon, Ch. 1 & 2

Part of the solution to this aporia is found in the first chapter of *Metaphysics*, Book Gamma:

There is a science which investigates being as being and the attributes which belong to this in virtue of its own nature. Now this is not the same as any of the so-called special sciences; for none of these others deals generally with being as being. They cut off a part of being and investigate the attributes of this part - this is what the mathematical sciences for instance do. Now since we are seeking the first principles and highest causes, clearly there must be some thing to which these belong in virtue of its own nature. If then our predecessors who sought the elements of existing things were seeking these same principles, it is necessary that the elements must be elements of being not by accident but just because it is being. Therefore it is of being as being that we also must grasp the first causes. (*Metaphysics*, Book Gamma, 1003^a21-32.)

The solution illustrates a necessary ontological connection between being and the causes. This first aporia raised the question “Is there one single science of all the causes, or are there many?” the

answer is that there is one certain science, and it is the science which investigates being as being. In an investigation into causes, we are seeking, “something to which these belong in virtue of its own nature.” (*Metaphysics* Book Gamma, 1003^a27-28.) The special sciences, such as biology or meteorology, investigate only a part of being, and therefore these special sciences cannot investigate the first principles and highest causes because as special sciences, they are limited in their scope of inquiry, and cannot investigate “being as being and the attributes which belong to this in virtue of its own nature.” (*Metaphysics* Book Gamma, 1003^a21-22.) An investigation into causes in any of the special sciences will yield knowledge concerning a cause or causes only in relation to the aspect of being that is the subject of inquiry in that science.¹⁰ For example, any causal investigation in biology will deal with causes only insofar as they are related to that subject. Any knowledge gained concerning causes will be in relation to the subject of biology, and, since we are seeking the science of first principles and highest causes, any of the special sciences fail to meet that criteria by definition of their subject matter. There is, however, a science that studies being *qua* being. Since we are seeking a science which investigates all the kinds of causes, we must also seek out the very same science which investigates being as being, because in doing so, we inquire into the causes in the most general way, not as explanations of phenomena in special sciences, but through the study “of being as being that we also must grasp the first causes.” (*Metaphysics*, Book Gamma, 1003^a31.)

The second part of the solution to the first aporia is found in *Metaphysics*, Book Epsilon, chapters one and two. The opening chapter in *Metaphysics*, Book Epsilon chapter one is concerned with how the science we are searching for, i.e. first philosophy, is distinct from other sciences. Aristotle writes in the following passage how indeed the particular sciences study only one aspect of being.

We are seeking the principles and the causes of the things that are, and obviously of things *qua* being. For there is a cause of health and of good condition, and the objects of mathematics have principles and elements and causes, and in general every science which is ratiocinative or at all involves reasoning deals with causes and principles, exact or indeterminate; but all these sciences mark off some particular being-some genus, and inquire into this, but not into being simply nor *qua* being, nor do they offer any discussion of the essence of the things of which they treat; but starting from the essence-some making it plain to the senses, others assuming it as a hypothesis-they then demonstrate, more or less cogently, the essential attributes of the genus with which they deal. It is obvious, therefore, from such a review of the sciences, that there is no demonstration of substance or of the essence, but some other way of revealing it. And similarly the sciences omit the question whether the genus with which they deal exists or does not exist, because it belongs to the same line of thought to show what it is and that it is. (*Metaphysics*, Book Epsilon, 1025^b1-17.)

While all of the particular sciences investigate only particular attributes of an underlying genus, these types of investigations are not a study of being *qua* being. A study of a particular genus yields knowledge only related to that being, not being in general, and that knowledge is limited to a knowledge only of the *per se* belongings of that genus. From a demonstration these investigations show through the senses or through a hypothesis certain 'essential attributes'¹¹ or *per se* belongings which belong to that particular genus. Such a demonstration of only attributes,

however, lacks any knowledge concerning the substance or essence of the genus, and furthermore, it also lacks any explanation into questions pertaining to existence, because of all the sciences, only metaphysics fully inquires into being *qua* being by asking “what it is”¹² in relation to its existence. The particular sciences demonstrate only the attributes of that particular genus.¹³ Metaphysics, however, is a universal science that investigates not particular beings, but being in general, or being *qua* being. Therefore, metaphysics is the universal science that is most concerned with the study of being *qua* being because it is the only 1) science that investigates being on a universal level and in a general way 2) science that is concerned with substance and essence in an ontologically structured way and 3) is concerned with questions concerning whether or not something exists. Metaphysics, then, is concerned with the study of being on a universal level, that is, a general investigation into being itself, that provides the framework for theology.

The second paragraph in *Metaphysics*, Book Epsilon chapter one is concerned with a comparison of the three theoretical sciences; natural science, (physics), mathematics, and theology. It is here, in the second paragraph of Book Epsilon chapter one, in the exposition of the tripartite classification of the theoretical sciences, where we find the second part of the solution to the first aporia. Such a solution requires an examination of the theoretical sciences because of the nature of the subject of inquiry. Aristotle has already determined in *Metaphysics*, Book Gamma chapter one that there is a science of being *qua* being and that through the study

of this science we are able to gain knowledge of the first and highest causes. Such a science is not the same as any of the particular sciences because of its subject matter and also an investigation into first causes implies that it is a theoretical science. Physics is the study of one class of beings that have movement and rest. One reason why physics is a theoretical science is because it is neither practical nor productive.¹⁴ The principles of a productive science are present in the producer, such as the capacity of art. The principle of a practical science is present in the person acting, namely, choice. There are only three different types of sciences, the practical, the productive, and the theoretical, and since physics isn't either practical or productive, it must be theoretical.¹⁵

Another reason why physics is theoretical concerns the formulae of its subject matter. Physics provides definitions of its subject matter that are similar to the definition of snub. Snub is defined as a concave nose, and that definition, like the definitions provided by physics, is bound up with matter. For it is not possible to define the word snub without referring to the matter with which the definition is bound up with. The definition of snub is concave nose, and this definition is dependent upon the matter that it describes. Physics is also the same. Definitions provided by physics are bound up with matter and such definitions or objects that they describe cannot be defined without reference to movement.¹⁶

Mathematics is also a theoretical science because some of the objects of mathematics are considered to be *qua* immovable and *qua*

separable from matter.¹⁷ However, if we are seeking to define which science studies all of the causes, it is necessary to ascertain which science studies that which is eternal. Aristotle raises this point while solving the first aporia in the following passage from Book Epsilon, chapter one:

But if there is something which is eternal and immovable and separable, clearly the knowledge of it belongs to a theoretical science, -not, however, to natural science (for natural science deals with certain movable things) nor to mathematics, but to a science prior to both. For natural science deals with things which are inseparable from matter but not immovable, and some parts of mathematics deal with things which are immovable, but probably not separable, but embodied in matter; while the first science deals with things which are both separable and immovable. Now all causes must be eternal, but especially these; for they are the causes of so much of the divine as appears to us. There must, then, be three theoretical philosophies, mathematics, natural science, and theology, since it is obvious that if the divine is present anywhere, it is present in things of this sort. And the highest science must deal with the highest genus, so that the theoretical sciences are superior to the other sciences, and this to the other theoretical sciences. (*Metaphysics*, Book Epsilon, 1026^a10-22.)

Even though natural science and mathematics are considered to be theoretical philosophies, they do not investigate, as their subject matter all of the causes, i.e. that which is eternal, immovable and separable. The theoretical philosophy, which is the single science that investigates all of the causes is theology, which Aristotle also identifies as *prôtê philosophia*. As will be shown in the solution to the fifth aporia, the ultimate cause is in fact divine, and therefore it is theology that is the most superior of the theoretical philosophies. It is actually initially in Book

Alpha, however, where Aristotle raises the idea of divinity in relation to *prôtê philosophia*.

II.2 Theology and the science of being *qua* being

At the opening of the *Metaphysics*, in Book Alpha, chapter one, Aristotle posits the ways in which knowledge is acquired. The most fundamental way of acquiring knowledge is through sense perception and memory. The combination of sense perception and memory create experience, *empeiria*, and it is through experience that one may gain an understanding of certain particulars. It is also through experience from which science, *epistêmê*, and art, *techne*, are formed. The man who possesses *empeiria* without *techne* is capable of forming judgments of particulars within particular situations only, while the man that possesses *techne* is able to form judgments universal in scope that apply to all individuals within a class. To be capable to form such universal judgments one must be in possession of knowledge that concerns why something is the way it is and the causes that are responsible for its existence. Those that possess *techne* are wiser than men who possess only *empeiria*. Men who possess *empeiria* without *techne* may know that something exists, yet they lack the understanding of why it is, and the causes of its existence. The possession of wisdom, *sophia*, then, is directly related to the possession of a universal knowledge concerning causes and the fundamental, or first principles of all things.

In Book Alpha, chapter two, Aristotle states that there indeed is a science, *epistêmê*, which studies the causes and first principles of all things. Such a yet unnamed science that studies the causes and first principles is pursued solely for the sake of knowing and it serves no utilitarian or secondary function. Aristotle is extremely clear on the placement of this yet unnamed science amongst all of the sciences and its goal, 'And the science which knows to what end each thing must be done is the most authoritative of the sciences, and more authoritative than any ancillary science; and this end is the good in each class, and in general the supreme good in the whole of nature.'¹⁸ Furthermore, such a science is not one of the productive sciences. Philosophizing is rooted in wonder, and a search for *epistêmê* concerning the causes and first principles of things is a philosophical search for a universal knowledge that can be called wisdom. The goal of this science is to possess wisdom, and likewise to be free of ignorance, and such a science exists for the sake of the acquisition of wisdom and knowledge, and by its nature it is not productive, but theoretical.

A science that deals with causes, the first principles, a universal knowledge of all things, and that which is the best in nature is perhaps seen by some to be beyond the scope of human ability, posits Aristotle. Although Aristotle does not at all concede to this point, he does indeed, however, immediately acknowledge a theological aspect to this science.

For the most divine science is also most honourable; and this science alone is, in two ways, most divine. For the science which it would be most meet for God to have is a divine science, and so

is any science that deals with divine objects; and this science alone has both these qualities; for God is thought to be among the causes of all things and to be a principle, and such a science either God alone can have, or God above all others. All the sciences indeed, are more necessary than this, but none is better. (Aristotle, *Metaphysics*, Book Alpha, 983^a4-11.)

Aristotle states in the above passage why there is a divine element to this science. Such a science is divine because of its subject matter. If we are seeking the causes and first principles of things, then we are seeking out knowledge and wisdom concerning God. The primary or initial possessor of such a science would also be God, for divine knowledge rightly belongs to that which is most divine. It seems to be clear, then, from as early on in the *Metaphysics* as Book Alpha, chapter two, that the science we are searching for is divine, and that the subject of that science is God. Therefore, it can also be said that Aristotle is calling for a search for that which is eternal to be studied in the science that is being sought.

A difficulty concerning what the subject matter is of this sought after science is encountered at the beginning of Book Gamma, for it seems to be quite different from the subject matter of a divine science. Aristotle distinguishes this sought after science as the science of being *qua* being. Unlike the particular sciences that investigate only a part or certain attributes of being, the science of being *qua* being investigates everything that exists in so far as it is being, and can therefore be called a general, or universal ontology. Such a study inquires into being *qua* being, and such a universal ontology differs greatly in terms of its subject matter when compared to theology.

Aristotle returns to the idea of a divine science as being the sought after science in Book Epsilon, chapter one. In Book Epsilon, Aristotle classifies theoretical philosophy into three parts: physics, mathematics and theology. Since the causes are eternal, there must be some aspect of them that is divine, and therefore Aristotle thinks that theology is the science that we are seeking. So, does first philosophy study only that which is divine or does it study being *qua* being, a universal ontology, or both? Patzig sums up this dilemma quite clearly in the following passage.

Such an unexpected conclusion to so extended an introduction to 'first philosophy' must seem strange to the reader. It is understandable that an author should see the fundamental philosophical science as universal ontology. We can also accept that a philosopher should elevate theology above all other sciences because of the importance of its object.¹⁹

Although interpreters and commentators may have found the combination of theology and the science of being *qua* being as a single study to be an internal inconsistency within the *Metaphysics*, Aristotle thinks otherwise, for he directly addresses the two seemingly inconsistent characterizations of the science we are searching for in the following passage.

One might indeed raise the question whether first philosophy is universal, or deals with one genus, i.e. some one kind of being; for not even the mathematical sciences are all alike in this respect, - geometry and astronomy deal with a certain particular kind of thing, while universal mathematics applies alike to all. We answer that if there is no substance other than those which are formed by nature, natural science will be the first science; but if there is an immovable substance, the science of this must be prior and must be first philosophy, and universal in this way, because it is first.

And it will belong to this to consider being *qua* being-both what it is and the attributes which belong to it *qua* being. (Aristotle, *Metaphysics*, Book Epsilon, 1026^a24-32.)

It is here in this passage in Book Epsilon where Aristotle refers to the science which we are seeking as first philosophy, or *prôtê philosophia*. Theology is *prôtê philosophia* because of the primacy of its subject matter. As will be shown in the analysis of the fifth aporia, there is indeed a substance that is eternal and immovable, and it is the cause of all things. Aristotle concludes in Book Lambda that this substance is God, and is the most prior, the best, and is the cause of all things. As the cause of all things and its eternality it can be called what is first, and therefore Aristotle aptly characterizes theology as *prôtê philosophia*. Furthermore, *prôtê philosophia* also functions as a universal ontology for it contains within it also the study of being *qua* being. Aristotle sees no contradiction here between the dual characterizations of *prôtê philosophia* as theology and the *epistêmê* of being *qua* being. This is because of the special primary status and nature of this universal, primary, and general science. *Prôtê philosophia* is theological in the sense that it studies the divine, eternal cause or causes of all things and the first principles, and it is also simultaneously ontological because of its universal scope in inquiry. The detailed reasoning why Aristotle finds no contradiction in his dual characterizations of *prôtê philosophia* lies within an analysis, according to Patzig's line of interpretation, of part to whole, in terms of the focal meaning or the *pros hen* structure that exists amongst things. (*Pros hen* means 'in relation to one,' in English.)

As we have just seen, Aristotle appears to recognise a very peculiar relationship of part to whole, by which the part supplies in a way the content and principle of the whole. The question arises whether there are examples of this metaphysical relationship between favoured part and whole in addition to the relationship of first philosophy to the other philosophical disciplines. Such examples might of course throw some light on the relationship that concerns us. In fact, Aristotle provides us with a whole array of such cases; and we shall see that this metaphysical structure, under the name of 'paronymy' or of *pros hen legesthai* ('be so called in relation to some one thing'), has a not inconsiderable standing among Aristotle's modes of argument.²⁰

Aristotle prefaces examples of the *pros hen* structure in Book Gamma, chapter two by stating, 'There are many senses in which a thing may said to 'be', but they are related to one central point, one definite kind of thing, and are not homonymous.'²¹ What Aristotle says in this passage is the clue, or the bridge that will show that there indeed exists an internal consistency in the claim that *prôtê philosophia* is both theology and is the *epistêmê* of being *qua* being. It is important to consider that Aristotle remarks that the relationship of entities to being is not merely homonymy. When things are homonymous they are related to each other ambiguously.²² When things are related by a *pros hen* ambiguity they exist in relation to one central point. Aristotle illustrates this with the example of health. The condition of being healthy is used as one example to illustrate the *pros hen* structure. Healthy can be said of a person in general, it can be said of a person's complexion or physical appearance, it can be said of certain exercises such as walking, and it can be said concerning a person's diet. All of the above examples are different ways in which healthy describes people, activities, conditions,

and diets. They are all various things that are related to one central, primary thing, i.e. health. The *pro hen* structure also applies to substance.

So, too, there are many senses in which a thing is said to be, but all refer to one starting point; some things are said to be because they are substances, others because they are affections of substance, others because they are a process towards substance, or destructions or privations or qualities of substance, or productive or generative of substance, or of things which are relative to substance, or negations of some of these things or of substance itself. (Aristotle, *Metaphysics*, Book Gamma, 1003^b5-10.)

It becomes clear in the above passage that *ousia* is also subject to the *pros hen* structure, and that it is the starting point for all of the other senses or conditions for a thing's existence. Substance is first of the ten categories because it is the most primary and is indeed a cause for the other categories. The dual characterizations of *prôtê philosophia* as both theology and the *epistêmê* of being *qua* being are united by the *pros hen* structure of *ousia*, *substance*. The Unmoved Mover that is the subject of theology is the cause of all other substances, and therefore it is most primary, and the best, of all substances. The *epistêmê* of being *qua* being, being a universal ontology, studies *ousia*, substance, in the most general way. Theology and the *epistêmê* of being *qua* being both investigate substance; for theology investigates the most primary and the cause of all other substances, and the *epistêmê* of being *qua* being studies *ousia* in a general way, for *ousia* is the existential foundation for all beings. By applying the *logikos* method in an investigation into *prôtê*

philosophia it becomes clear that there is a logical consistency in its dual characterization. By the *logikos* approach I mean an investigation or analysis from the perspective of how one should speak about, in this case, being. This leads to the certainty that such a science indeed exists and that it is capable of being possessed by those that search for wisdom.

The arrival at a definition of *prôtê philosophia* as both theology and the *epistêmê* of being *qua* being is rooted in a comprehension of the *pros hen* structure and the two stages view. The first stage concerns universal ontology and the *logikos* approach which establishes the *pros hen* structure through a general analysis of being. This general analysis of being and the establishment of the *pros hen* structure determine the way in which how one ought to speak about being. Following Chiba's analysis of Aristotle's theory of demonstration it becomes clear that one of the initial steps in any investigation is being cognizant of the fact that the correct way how we ought to speak about being is in accordance with the principle of non-contradiction.

The principle of non-contradiction, to which such general notions as 'sameness' and 'otherness' belong, is the basic device of every *logikos* (formal and general) analysis of being. The *logikos* argument as a 'philosophical investigation according to the truth (*pros philosophian kat' aletheian*)' is carried out attending to 'how one should speak (*pôs dei legein*)' on the basis of the principle of non-contradiction (*Top.* I 14 105^b19-37, *Met.* VII 4 1030^a27). As we have seen, Aristotle's theories of the predicables and categories are themselves an outcome of a *logikos* analysis of being. One way to prove *what S is* is to deduce it through a distinct account of the same *S*. This is also the case for properties as well. But *the what it was to be S* is constituted by both *what S*

is and what is *proper* to *S*. ‘Hence (*hôte*)’, Aristotle infers, the same situation applies to the essence as well.²³

The principle of non-contradiction, which is the subject matter of the second aporia of Book Beta, states that contradictory statements cannot at the same time be said to be true of the same thing. An analysis of the second aporia will show in detail Aristotle’s arguments for the principle of non-contradiction. Prior to that however, it is important to establish the basis for the two stages view so that when we speak of the dual characterization of *prôtê philosophia* we do so logically and without any contradictions. The first stage, which is universal ontology and the *logikos* approach, proceeds without any observation of things in the sensible world. Before observing and making statements about the sensible world, it is important to examine the way in which we should speak about things. According to the *pros hen* structure everything is said in respect to one thing. The *pros hen* structure is universal ontology, i.e. it is the work of universal ontology. A *logikos* analysis of being²⁴ proceeds by following the inherent truth of the principle of non-contradiction.

The second stage is theology, and it is also considered in terms of the *pros hen* structure. *Prôtê philosophia* consists of both universal ontology, i.e. the theory of the categories and theology. *Prôtê philosophia* culminates in theology, for universal ontology and the proper way in which we must speak is cashed out by God. The content of *hen* is filled in by God. God must be that one and all other entities are ordered accordingly. Since God is primary, it is also universal. Such a claim is

sustained by the *pros hen* structure at the universal level. Theology makes use of the *pros hen* structure, which is established in the *logikos* way.

On the basis of the arguments that have been developed and analyzed thus far, it will be shown in the third part of the solution to the fifth aporia, there is indeed a separate, immovable substance that is of the nature of the divine. Aristotle analyzes this in *Metaphysics* Book Lambda, and therefore it can be stated here that there is indeed a science called *prôtê philosophia*, and that it is the most universal of all the sciences, and in addition to investigating being *qua* being, essence, substance, and form, it is the duty of such a science to investigate all of the kinds of causes. Therefore, as the solution to the first aporia, it is clear from the above passages analyzed from *Metaphysics* Book Gamma and Book Epsilon that it is indeed just one science that investigates all of the kinds of causes, and this science is called *prôtê philosophia*.

Chapter Three

I. Introduction and Presentation of the Second Aporia in *Metaphysics*, Book Beta, Ch. 2

Second Aporia: (996^b26-997^a15) Does it belong to one science or more than one science to study the principles of demonstration?

The aporia that involves the principle of non-contradiction is the second out of the fifteen aporia, and therefore, it is a puzzle concerning the possibility of there being a science of being *qua* being. If this aporia is solved, then inquiry into first philosophy will be grounded in the implicit truth of the solution. Such a solution will also validate the aporetic method as the correct method of initiating investigations into the science of being.

The second aporia asks whether or not it is the task of a single science, metaphysics, i.e., the science of being *qua* being, to investigate both the ultimate principles of being and the principles of demonstration, i.e. the principle of non-contradiction. This aporia is concerned with the relationship and priority between metaphysics and logic. Does metaphysics contain within it the principles of demonstration? If metaphysics and logic are separate sciences, which one is prior and more fundamental?

The puzzle is presented as follows:

But, regarding the starting-points of demonstration also, it is a disputable question whether they are the object of one science or of more. By the starting-points of demonstration I mean the common beliefs, on which all men base their proofs, e.g. that everything must either be affirmed or denied, and that a thing cannot at the same time be and not be, and all other such propositions; the question is whether the same science deals with them as with substance, or a different science, and if it is not one science, which of the two must be identified with that which we now seek. (*Metaphysics*, Book Beta, 996^b26-33.)

One possible answer Aristotle proposes to this aporia is stated within the exposition of the aporia itself:

It is not reasonable that these topics should be the object of one science; for why should it be peculiarly appropriate to geometry or to any other science to understand these matters? (*Metaphysics*, Book Beta, 996^b33-35.)

This possible answer to the aporia seems wholly appropriate. Each different science contains within itself the fundamental principles of that science only. For if the science of being *qua* being, i.e. metaphysics, contained the fundamental and ultimate principles of demonstration, then the definition and function of metaphysics itself would be not only the investigation of being *qua* being, but also an investigation into the axioms of logic. This is why we have branches of separate sciences, to investigate specifically the subject matter of that particular science. Logic, however, is different from the particular sciences such as biology, physics and astronomy. Logic is the science of demonstration upon which all the other sciences are dependent upon for reasonable argumentation. This is why the aporia is concerned with metaphysics and logic, other than say, metaphysics and astronomy. Both

metaphysics and logic are fundamental sciences, fundamental and ultimate in the sense that what they investigate and demonstrate is applicable to the most basic aspects of being and demonstration.

This aporia also raises the question of the manner of knowledge of the axioms, and is explicated as follows:

If then it belongs to every science alike, and cannot belong to all, it is not peculiar to the science which investigates substances, any more than to any other science, to know about these topics. -And, at the same time, in what way can there be a *science* of the first principles? For we are aware even now what each of them is; at least even other sciences use them as familiar. And if there is a demonstrative science which deals with them, there will have to be an underlying kind, and some of them must be attributes and others must be axioms (for it is impossible that there should be demonstration about all things); for the demonstration must start from certain premises and be about a certain subject and prove certain attributes. Therefore it follows that all attributes that are proved must belong to one class; for all demonstrative sciences use the axioms. -But if the science of substance and the science which deals with the axioms are different, which of them is more authoritative and prior? The *axioms* are most universal and are principles of all things. And if it is not the business of the philosopher, to whom else will it belong to inquire what is true and what is untrue about them? (*Metaphysics*, Book Beta, 997^a2-14.)

We see here in this passage the use of logic within the particular sciences. It does not seem reasonable for a particular science to contain the ultimate principles of demonstration because all of the particular sciences are dependent upon those principles. Since the axioms of logic are the “most universal and are principles of all things,” (*Metaphysics*, Book Beta, 997^a12-13) it is then necessary to exclude such axioms from being contained within a particular science. However, another aspect of the dilemma arises. If metaphysics and logic are separate sciences,

which of the two is prior, and moreover, which of the two sciences is the most authoritative?

II. Solutions to the Second Aporia

a. The Solutions in *Metaphysics*, Book Gamma, Ch. 1, 2, 3, & 4

The solutions to the second aporia are found in Book Gamma, and the solution to the first part of the aporia is directly connected to the concept of being *qua* being. At the outset of *Metaphysics*, Book Gamma chapter three Aristotle states, “ We must state whether it belongs to one or to different sciences to inquire into the truths which are in mathematics called axioms, and into substance.” (*Metaphysics* Book Gamma 1005^a18-20.) The principles of demonstration, i.e., the axioms of mathematics, do indeed belong to “the science of the philosopher.” (*Metaphysics* Book Gamma 1005^a21-22) This is because the principles of demonstration are not concerned with a particular aspect of being, such as the subject of inquiry for the particular sciences, but with being as a whole, and is therefore a part of first philosophy. Aristotle further states the following concerning the principles of demonstration:

And all men use them, for they are true of being *qua* being, and each genus has being. But men use them just so far as to satisfy their purposes; that is, as far as the genus, whose attributes they are proving, extends. Therefore since these truths clearly hold good for all things *qua* being (for this is what is common to them), he who studies being *qua* being will inquire into them too. –And for this reason no one who is conducting a special inquiry tries to say anything about their truth and falsehood, -neither the geometer nor the arithmetician. Some natural philosophers indeed have done so, and their procedure was intelligible enough; for they thought that they alone were inquiring about the whole of nature and being. But since there is one kind of thinker who is even above the

natural philosopher (for nature is only one particular genus of being), the discussion of the truths also will belong to him whose inquiry is universal and deals with primary substance. (*Metaphysics* Book Gamma 1005^a23-1005^b1.)

We see here that the use of the principles of demonstration do indeed also belong to the particular sciences, insofar as they are used as tools for inquiry. As tools for inquiry within the particular sciences, the truth or falsity of the foundations of logic are of no concern. The only science that is concerned with such truth and falsity is the science that studies the whole of being, the study of being *qua* being, i.e., first philosophy. Natural philosophers have attempted such an inquiry, but their results failed because of the subject of their inquiry. The study of nature is a particular science, and it is not a study of the whole of being, and therefore they were studying only a part of being, not being *qua* being. There is a science which stands above the science of nature. The study of being *qua* being is a universal, more encompassing study than the study of nature, and because of this it is the philosopher, and not the natural philosopher that is qualified to study the fundamental principles of logic. Any inquiry into the truth and falsity of the foundations of logic must take place within first philosophy, and this inquiry belongs to the philosopher. Such an inquiry is beyond and above the qualifications of the natural philosophers because they incorrectly assume that nature is first philosophy, whereas in truth it is only the particular study of nature.

The difficulties in the second part of this aporia have to do with the manner of the knowledge of the axioms. Aristotle solves this part of the aporia in *Metaphysics* Book Gamma chapter four, however an

introduction to the solution is found at the end of Book Gamma chapter three. The duties of the philosopher are to investigate being *qua* being, the science of wisdom, and the principles of demonstration which determine the truth or falsehood which all the other special sciences depend upon for their investigations. The investigation of being *qua* being is the most universal of investigations, and because of this, it is necessary to be able to show the most fundamental principles of this investigation. Such a fundamental principle exists, and it is not a hypothesis, and is well known to all men, and is taken to be a self-evident truth. For if such a fundamental principle were to be unknown to all men, then it would remain ambiguous and therefore the philosopher would not be able to say that it is a certain, evident best known principle. This is the principle of non-contradiction, (PNC) and in *Metaphysics* Book Gamma chapter three, Aristotle presents it as such:

Evidently then such a principle is the most certain of all; which principle this is, we proceed to say. It is, that the same attribute cannot at the same time belong and not belong to the same subject in the same respect; we must presuppose, in face of dialectical objections, any further qualifications which might be added. This, then, is the most certain of all principles, since it answers to the definition given above. For it is impossible for any one to believe the same thing to be and not to be, as some think Heraclitus says; for what a man says he does not necessarily believe. If it is impossible that contrary attributes should belong at the same time to the same subject (the usual qualifications must be presupposed in this proposition too) and if an opinion which contradicts another is contrary to it, obviously it is impossible for the same man at the same time to believe the same thing to be and not to be; for if a man were mistaken in this point he would have contrary opinions at the same time. It is for this reason that all who are carrying out a demonstration refer it to this as an ultimate belief; for this is naturally the starting point even for all the other axioms. (*Metaphysics*, Book Gamma, 1005^b17-33.)

We see in the above passage that the PNC is the most fundamental of logical principles and that it is the most certain principle which is impossible to deny. In Book Gamma chapter three and Book Gamma chapter four the PNC is expressed in the following ways:

1) The same attribute cannot at the same time belong and not belong to the same subject in the same respect. (*Metaphysics*, Book Gamma 1005^b19-20.)

An example that illustrates this formulation of the PNC is that of place. Sitting cannot both belong and not belong to the same subject at the same time. A man can be either sitting or not sitting, and it is not possible for sitting to both belong and not belong to the same man at the same time. It is simply not possible, and it does not make sense logically.

2) It is impossible that contrary attributes can belong at the same time to the same subject. (*Metaphysics* Book Gamma 1005^b26-27.)

Again, the example of man illustrates this expression of the PNC. A color, quality or other attribute and their accompanying contraries cannot belong at the same time to the same man. A musical man cannot at the same time be non-musical.

3) It is impossible for anything at the same time to be and not to be.
(*Metaphysics*, Book Gamma 1006^a3-4.)

This expression is related to the first two expressions in terms of the same thing containing contraries however this expression contains the notion of being. Expressions one and two are clearly about attributes within things, while expression three is about the things themselves. A man cannot be sitting and not sitting at the same time, and he cannot be both musical and not musical at the same time, and further it is impossible for a man to be and not be at the same time. Politis states that this 3rd expression of the PNC is “simply an abbreviation of the first two²⁵, however this explanation is not adequate because of the introduction of being and non-being into Aristotle’s idea of the PNC. The first two expressions of the PNC are dependent upon the 3rd. If something is, then it is impossible for it not to be, and if it something isn’t, it is impossible for it to be, and therefore the statements or attributes, whether contrary or not, will not belong to it. Therefore, we will see that the PNC is not only the most certain of logical principles, it is also an ontological principle because the notions of being and non-being are directly related to it. Without the formulation of this example of the PNC, it would not be possible to even consider the first two.

4) It is impossible that it should be at the same time true to say the same thing is a man and is not a man. (*Metaphysics*, Book Gamma 1006^b32-34.)

The 4th expression of the PNC is quite different from the first three. The first three expressions of the PNC are concerned with things and their attributes. The fourth expression is concerned with the statements of those things and attributes. It is important for Aristotle to state the difference between whether a property or attribute is true or false of a thing, and also whether or not a statement about such a thing is true or false.

With these four expressions taken as a whole certain aspects of the PNC become clear. First, the axioms or fundamental principles of logic and the study of being *qua* being do indeed belong together. Further, the study of metaphysics takes place through logical analysis, with the PNC being the most fundamental of all logical axioms. The PNC is the starting point for all the other axioms, yet its subject matter is ontological and rests upon the notion of being *qua* being.

At the outset of Book Gamma chapter four Aristotle engages in a rigorous series of arguments for the defense of the PNC while at the same time criticizing his opponents that believe in the possibility of a thing being able to be and not to be at the same time. The PNC, the most prior of the first principles, is rejected by his opponents because they demand a demonstration. A demonstration of all things is not

possible because this would create an infinite regress without an actual demonstration. Consider the following example: In an attempt to negate the PNC, one may state: a man is both sitting and not sitting. Even though this cannot be possible, it is possible to state something without actually believing in it. Now, if it is stated that a man is both sitting and not sitting, our opponents will argue that such a situation is possible due to the belief that opposites are the same²⁶ or that such a thing is possible because divinity is the underlying unity of all things.²⁷ Whether or not that is the case isn't important, what is important is that it is impossible to actually demonstrate the above statement. This is also true of the PNC itself, and Aristotle states, "but if there are things of which one should not demand demonstration, these persons cannot say what principle they regard as more indemonstrable than the present one."²⁸ Even though the PNC and the above statement about the sitting and non-sitting man are both indemonstrable, we can see the falsity of the above statement due to the fundamental certainty of the PNC. Any attempted positive demonstration to refute the PNC or any examples that attempt to refute the PNC by positive demonstration creates an infinite regress because there is an assumption of a more fundamental and prior principle which certainly doesn't exist. Therefore, demonstration need not be the criteria by which we judge the truth and falsity of all things.

Even though the PNC is not able to be proven through positive demonstration, the impossibility of its denial is provable by the elenchus, or elenctic refutation.²⁹ An elenctic refutation is a negative proof, and we

are able to employ such a refutation as a negative proof of the PNC if our opponent says something. If our opponent remains silent, then we are unable to argue with him, and he will be considered to be just a plant. Besides silence, a plant has no thought and no logic, and such an opponent isn't even worthy of engaging in an argument. Aristotle distinguishes between negative demonstration (elenctic refutation) and demonstration proper. In demonstration the principle to be defended is assumed, while with elenctic refutation we depend upon the speaker's assumption. It is not correct to demand that the speaker say that something is or that something isn't, but only for the speaker to say something that is important to himself or others. For if what our opponent says has no significance, it isn't even worth arguing with him due to his lack of reason and the obvious lack of logic he will therefore be unable to defend any rational objections made by others in such an argument. However, if our opponent does indeed utter a statement that is significant, then there will be something definite with which we can proceed to attempt to prove. This proof, or negative refutation, however, is the responsibility of the listener, not the demonstrator because just by listening and accepting that the statement holds significance is to eliminate one's initial reasoning and by doing so reason itself will ultimately show the statement's internal weaknesses. The consequence of this elenctic refutation will be that it is not true that all things contain contradictions simultaneously.

The words 'be' and 'not be' are used to provide a proof of this argument and to show the ontological significance of the PNC. It is obvious that 'be' and 'not be' have certain, distinct meanings, and since they do, all things will not contain within themselves contradictions simultaneously. Let us consider the signification of the word 'man.' One thing contains one definite definition and Aristotle defines 'man' as 'two-footed animal.' Such a definition applies to each and every man, and the signification of the word 'man' means that anything that is a 'two-footed animal' is considered to be a man. It is possible to have several definite meanings of the same word. The above example of man illustrates Aristotle's point. The word 'man' may contain several different definite meanings, such as 'two-footed animal' or 'reasoning animal' or 'producer of artifacts.' These definitions, however, are in fact limited, and if our opponent claimed that the word 'man' contained an infinite number of definitions, then the word itself would have no meaning and reason and logic would cease to exist and it would not be possible to say anything with significance. Furthermore, if one stated that 'man' has an infinite number of definitions, then it would be impossible to distinguish between different things because everything would be the same. For thought to happen, we must indeed think of just one thing. When we think of 'to be a man,' for instance, it is impossible for us to think of the meaning to also mean 'not being a man' if 'man' is significant not only as a subject, but also what is predicated of a man. What is 'predicated of one subject' is not equivocal 'to having one meaning.' If that were so,

then the words 'musical' 'white' and 'man' would be synonymous and all things would be the same.

The PNC becomes ontologically significant through the following argument. Aristotle is concerned with a thing's signification, but he is more concerned with its ontological status. Do 'man' and 'not-man' exist simultaneously in one thing at the same time not in regards to just definition, but in actuality? If the PNC fails and 'man' and 'not man' mean the same thing, then 'being a man' and 'not being a man' also mean the same thing, and they will be one. And to be one means in fact that something is a single thing. Therefore if the statements 'being a man' and 'not being a man' are indeed one, then they will be a single thing. We see from above, however, that they are indeed different things. To say a thing is a man is to say it is a 'two-footed animal.' By saying this, we mean that 'two-footedness' is a necessary attribute applicable to man. This necessity implies therefore that it is not possible for a man not to be a two-footed animal, for this would mean that it is impossible for man not to be. Necessity also holds true of the ontological status of things: it is impossible to say that at the same time of one particular man that he both exists and does not exist. The definitory formula of a single thing is one meaning, and this meaning extends beyond the formula of a thing to its ontological status. The argument does not fail even with regards to the statement 'not being man', for 'being man' and 'not being man' have different definitions, and mean different things. 'Being white' and 'being man' are obviously different, and upon this fact it is clear that

'not being man' and 'being man' are also not only different, but since ontological status is a constituent of these statements, that they are even more strongly opposed to each other than the former two pairs and they indeed mean different things. However, if our opponent still insists that 'white' and 'man' are the same thing, then all things are not only not opposites, but we will have monism.

Another problem arises for our opponent when the question "Is white and man the same or different?" is asked without qualifications and our opponent answers with contradictory statements. Although our opponent thinks he may be answering the question, there is no acceptable answer in his contradictions. Such a set of contradictory statements would contain countless descriptions of man such as 'white' and other inconsistent statements. The only satisfactory answer to a question such as "is white and man the same or different?" or "is this or is this not a man?" would be an answer which states only one thing, without any additional contradictory statements such as " is white," "is sitting," or any other possible descriptions. Any object may have an infinite set of accidental properties, and since a complete description of all these properties is impossible, a suitable answer would contain no accidental properties and just a single definition. Adding accidental properties of a subject, whether or not those properties are indeed properties of a subject or not, and stating them are answers to what the thing is, is to ignore the rules of philosophical argumentation.

To argue in such a way means that one must ignore substance and essence. This is because by answering with a list of accidents to the question of what a thing is, one is ignoring a thing's essential attributes or properties and replacing them with accidents. Furthermore, if there is an essential property of being a man, negative statements such as 'not being man' or 'being not man' will in no way assist us in our search for substance or essence. For any negation of what a thing is certainly ignores substance and essence. To say what the substance is of a thing is to say what its essence is with nothing added to that. Therefore, if our opponents say that being essentially something is essentially being not-something or even essentially not being something, then the essence of the thing would be different. To argue in such a way, and to believe that such a form of argument is correct is flawed because in doing so one must abandon the ability to define anything, because all properties and attributes would become accidents, and since a thing has countless accidents, any attempt to define a thing would necessarily exclude a thing's substance or essence. The difference between substance and accident is this: substance is a thing's essential property, accidents are predicated of a subject and are infinite. Such a definition that ignores substance would continue *ad infinitum*. However, such a regress is impossible, because more than two accidents cannot be combined. Aristotle argues the point as follows:

For an accident is not an accident of an accident, unless it be because both are accidents of the same subject. I mean, for

instance, the white is musical and the latter is white, only because both are accidental to man. But Socrates is musical, not in this sense, that both terms are accidental to something else. Since then some predicates are accidental in this and some in that sense, those which are accidental in the latter sense, in which white is accidental to Socrates, cannot form an infinite series in the upward direction, -e.g. Socrates the white has not yet another accident; for no unity can be got out of such a sum. Nor again will white have another term accidental to it, e.g. musical. For this is no more accidental to that than that is to this; and at the same time we have drawn the distinction, that while some predicates are accidental in this sense, others are so in the sense in which musical is accidental to Socrates; and the accident is an accident of an accident not in cases of the later kind, but only in cases of the other kind, so that not *all* terms will be accidental. There must, then, even in this case be something which denotes substance. And it has been shown that, if this is so, contradictories cannot be predicated at the same time. (*Metaphysics*, Book Gamma, 1007^b2-19.)

In advancing his argument against those that prescribe to the views of monism and attempt to deny the PNC, Aristotle states once again that “if all contradictories are true of the same subject at the same time, evidently all things will be one.” (*Metaphysics*, Book Gamma, 1007^b19-20.) This would mean we could affirm and deny anything about anything, and a man, a wall, and a trireme would be all the same thing. Aristotle is criticizing the views of Protagoras³⁰ and Anaxagoras.³¹ If, according to Anaxagoras, an infinite number of elements are mixed together, and a man, a wall, and a trireme are indeed the same, nothing definite would exist. Anyone defending Anaxagoreanism that thinks that a man is not a trireme, will be forced to also assert the contrary, that a man is a trireme. By saying this, our opponent is not saying anything meaningful, he is just talking about the indeterminate. By talking about the indeterminate, he is talking about that which exists potentially, non-being.

Therefore our opponent's argument is flawed in the sense that he isn't even talking about being, just potential indeterminate non-being. Aristotle argues this point as follows:

For it is absurd if of every subject its own negation is to be predicable, while the negation of something else which cannot be predicated of it is not predicable of it, for instance if it is true to say of a man that he is not a man, evidently it is also true to say that he is either a trireme or not a trireme. If, then, the affirmative can be predicated, the negative must be predicable too; and if the affirmative is not predicable, the negative, at least, will be more predicable than the negative of the subject itself. If, then, even the latter negative is predicable, the negative of 'trireme' will be also predicable; and, if this is predicable, the affirmative will be so too. – Those, then, who maintain this view are driven to this conclusion, and to the further conclusion that it is not necessary either to assert or to deny. For if it is true that a thing is man and not-man, evidently also it will be neither man nor not-man. For to the two assertions there answers two negations. And if the former is treated as a single proposition compounded out of two, the latter also is a single proposition opposite to the former. (*Metaphysics*, Book Gamma 1007^b30-1008^a8.)

The theory (all contradictories are true of the same subject at the same time) will be true for all cases at all times or only true to some statements. If this theory is (a) not true of all statements then those special cases must be agreed upon. However, if this theory is (b) true for all cases, then either (1) negation will be true where assertion is true and assertion will be true where negation is true or (2) wherever the assertion is true the negation will be true but the assertion will not always be true where there is a negation. It is clear that b (2) contains something that does not exist. An opposite affirmation of a negation is even more clear to the mind, hence if non-being is an apparent truth, being itself will be even more true and more knowable. However, if b (1) is correct, then it is

either true to separate the predicates and get true statements such as saying 'a thing is white and also that it is not white'³² or it is not. If (x1) by separating predicates we do not get true statements then our opponents are really saying nothing and nothing can even exist. (A broader question which arises out of this position is how such a supporter of this theory could speak at all, or even walk, if he didn't exist.) Consequently, all things, such as man, God, wall, and trireme will be the same thing, one, and so will their contradictories. Also, if (x2) it is indeed possible to get true statements from separating predicates, the above result occurs and everything that is correct would be incorrect, and our discussion with our opponent is obviously about nothing at all, because while asserting what he believes is true, he must also at the same time negate the truth that he believes.

Aristotle asks that if someone believes if something is or if something is not is stuck in a falsehood, or that if someone believes both things (that something is and that something isn't) is grasping the truth. If such a person did indeed claim to have the truth, the content of his claim regarding the nature of things would be ambiguous. However, if he was not correct, but more correct than in believing the former view, there will already be a definite nature of being, and such a statement will be true, and not at the same time also not true.³³ Anyone that believes this, however, that right and wrong are both the same, can say nothing meaningful, for affirmations and negations mean the same thing. Such content would be empty, without judgments, and without any meaning.

Those that believe such things are no better at discerning the world than plants.

It now becomes clear that nobody actually believes such a theory, as evidenced from judgments made in everyday life. If a man makes a decision to walk to Megara, his decision actually compels him to initiate the journey, for to stay home and do nothing but contemplate the journey would be a decision made by a different thought, with a different result. If everything was both good and not good, such a man would also not hesitate to jump into a well, or walk off of a cliff, but as we see in our everyday experience, we intuitively judge which things are good and which things are bad, and these judgments are a result of our innate certain belief in the PNC. If there are those that believe this is not truth, but just opinion, they should be even more concerned with discovering the truth; just as a sick man is more concerned with health than a healthy man. All men make judgments, whether something is better, or worse, true or false. Therefore, our opponents that believe in monism and deny the PNC are actually denying their own judgments that are based on their experience.

Aristotle proposes one final argument: suppose, as the monists believe, that things are always both so and not so and also always not so and so. Throughout all of these things we find a greater and a lesser. Two is more of an even number than three, and furthermore those that equate four with five are more correct than those that say it equals a thousand. If one is more correct, then he is less wrong as the other,

meaning that he is less false and more true. Therefore, he is closer to the truth than the person that is totally incorrect. To be closer to the truth than being completely false is to be more grounded in what is true than in what is false. To arrive at this point is adequate, for we have abolished an unqualified doctrine that was blocking us from determining definitions in our thought.

b. The Solutions in *Metaphysics*, Book Gamma Ch. 5 and the Arguments Against the Relativists

The defense of the PNC and the arguments against those that deny it are continued in the *Metaphysics*, Book Gamma chapter five. Protagoras' doctrine is attacked first, because it is directly related to the final criticism of the PNC in Book Gamma chapter four, (that it is possible for the same thing to be and not to be) in the sense that both will either be simultaneously true or simultaneously false. Protagoras, a sophist, is known most for his man the measure theory. Plato illustrates Protagoras' famous doctrine in the dialogue *Theaetetus*.³⁴

Protagoras' doctrine is actually a theory of perception. Consider Plato's example of a cold wind from a passage found in 152^a in the *Theaetetus*. (endnote 33.) Two men experience the same wind at the same time. One man may perceive the wind to be cold, and therefore concludes that it is indeed a cold wind. The other man's perception may lead him to conclude that the wind is only slightly cold, or not even cold at all. For Protagoras, both men are correct, because whatever they

perceive is true. There is no objective, universal truth outside of the perception and experience of men. If this is true, then we can have no scientific knowledge, nor absolute knowledge of the world. Several questions arise with this doctrine in relation to the status of sensible objects. Is there one objective wind that both men perceive, or does the wind only exist subjectively for each man? If the wind is an objective wind does it contain opposites, such as hot and cold, simultaneously? Does the wind exist objectively but is dependent upon an individual's perception in order to judge its qualities? Are objects dependent of mind? Such a doctrine stands in direct opposition and is a potential threat to the PNC, and it is therefore for these reasons that Aristotle must confront Protagoras' doctrine and prove it to be incorrect.

The initial argument against the doctrine of Protagoras proceeds as follows: If all opinions and all appearances are true, then all statements will be both simultaneously true and false. This is because many men hold differing opinions, and while they hold these opinions they think that others that hold different opinions are incorrect. Therefore, the same thing will necessarily be subject to opposite opinions, individually taken as fact, and it will both be and not be. Also, if we seriously consider this assumption, then all opinions must be true. Men whose opinions are true and men whose opinions are false are in direct opposition with each other. Protagoras' relativistic view on reality means that such opposite opinions will be true. Therefore it becomes clear that both doctrines are grounded in the same type of thinking.

Aristotle makes the point that although both doctrines originate in the same type of thinking, the same methodology in argumentation against the philosophers of those doctrines should be avoided. Some of those philosophers should be persuaded to accept the PNC, and others should be compelled. Some philosophers deny the PNC because of difficulties in their thinking. These philosophers must be persuaded because their errors do not lie in their arguments but in their minds. Other philosophers deny the PNC due to the sake of argument. These philosophers should be compelled to accept the PNC through refutation against their arguments that are expressed in words. Let us call the philosophers that need to be persuaded Group A, and the philosophers that need to be compelled Group B. Aristotle spends the remainder of Book Gamma chapter five dedicated to the exposition and argumentation against philosophers in Group A.

c. The Group A Relativists

Those that unknowingly and unintentionally commit a logical fallacy by conflating opposite views due to difficulties in their thinking have formed their opinions by observing contradictions and contraries arising from the same thing in the sensible world. They therefore think that contradictions and contraries are both true at the same time. An argument in favor of this type of thinking is as follows: something that is not cannot come into being, therefore, the sensible object must have existed previously as both contraries simultaneously. Two philosophers

that support this type of thinking are Anaxagoras and Democritus. For Anaxagoras, nothing comes into being and nothing perishes. The world is composed of an infinite number of elemental stuffs. By elemental stuffs, Anaxagoras indicates things such as water, earth, flesh, bone, and also contraries such as hot and cold. Every sensible object is composed of an indeterminate portion of all the elemental stuffs, and whatever portion of elemental stuffs that prevails in the mixture of a given sensible object will provide the material properties for that object.³⁵ Such a theory of elemental stuffs is not in itself damaging to the PNC, for there is no outright contradiction. There is, however, an implicit sense of a thing's relativistic indetermination due to an admixture of an infinite number of elements. Democritus, an atomist, believed in an infinite number of atoms and in non-being, i.e. a void. Atoms do not perish and they do not come into being, however they do move in a void. For Democritus, we cannot have a direct knowledge of anything, only indirect knowledge because atoms are invisible and only those atoms contain any real properties.³⁶ Atoms (being) exist within a void (non-being) and therefore we have an apparent contradiction, i.e. being and non-being existing at the same time and at the same place. Aristotle thinks that anyone that believes in such an opinion should be confronted in the following way: they should be told that in a way they are correct, and that in another way they are incorrect. That which is is spoken of in two ways. In a way it is possible for a thing to come to be from that which is not, and in another way it is impossible. Also, in relation to this, the same thing can both be

a thing that exists and also a thing that does not exist, however, not in the same respect. Potentially, the same thing can simultaneously be two contraries, but not in actuality. Furthermore, such thinkers should consider the idea of a certain other substance, a substance which applies to all things that exist and in no way whatsoever can be characterized by movement, destruction or generation.

A relativistic view of the world leads to many truths. Whatever appears to an individual man is true for that man. Many men will hold differing opinions concerning the same thing and all these opinions will be true. It would be impossible to discern between absolute knowledge and mere opinion because knowledge itself is based on individual perception and not on a consensus. In addition to Protagoras, Anaxagoras, and Democritus, Aristotle also confronts Empedocles and Parmenides. Aristotle first quotes Empedocles and then Parmenides as saying:

For wisdom increases in men according to their present state

And elsewhere he says:

So far as their nature changes, so far to them always
Come changed thoughts into mind.

And Parmenides also expresses himself in the same way:

For as in each case the much-bent limbs are composed,
So is the mind of men; for in each and all men
'Tis one thing thinks-the substance of their limbs:
For that of which there is more is thought.
(*Metaphysics*, Book Gamma 1009^b19-25.)

The above quotes of Empedocles and Parmenides basically illustrate the incorrect opinions and beliefs of the philosophers in Group A. The philosophers in Group A basically confused the world of sensible objects and truth itself. Through sensible objects we perceive constant movement. Because of this constant movement, those that rely upon perception as a basis for knowledge and truth are unable to positively say anything in regards to something that is in a constant state of change, such as Heraclitus, who said that it is impossible to step into the same river twice.³⁷ Cratylus further criticized Heraclitus, by positing that one couldn't step into the same river even once. For if the world is indeed in a constant state of flux, no discernable qualities of sensible objects can be determined, and neither can affirmation of a thing's existence. If we can't talk about what qualities a thing has, then we can't even say whether or not it even exists. To say whether or not a thing exists is to make a statement about something undergoing constant change. Such constant change for Cratylus leads him to a denial in being able to state a

thing's ontological status. Whether or not the sensible object even exists is one point, another point is that we can't even talk about it.

The remainder of Book Gamma chapter five contains Aristotle's arguments against such relativism, a relativism which leads to an unintentional rejection of the PNC. The first argument concerns change itself.

But we shall say in answer to this argument also, that there is some real sense in their thinking that the changing, when it is changing, does not exist. Yet it is after all disputable; for that which is losing a quality has something of that which is being lost, and of that which is coming to be, something must already be. And in general if a thing is perishing, there will be present something that exists; and if a thing is coming to be, there must be something from which it comes to be and something by which it is generated, and this process cannot be *ad infinitum*. (*Metaphysics*, Book Gamma 1010^a15-22.)

In a way, it is correct to say that when something is changing, that it is not (that it does not exist or that it does not contain the properties that are being lost or acquired). For example, during the construction of a house, all the materials for the house may have been acquired, however the materials have not taken on the shape or quality of the house. Before construction, one can only say, "This wooden material will become a house," not, "this is a house." The wood has not yet taken on the qualities of a house, and it is therefore still only wood. The house is constructed out of the wood; it is the material from which the quality of a house is constructed. It is the wood which is acquiring the quality of house-hood. Only when the required change takes place, in this

example carpentry, does the wood become a house. Although the house may not yet exist, the material from out of which it will be constructed does indeed exist, the wood. Therefore, Cratylus was incorrect and overly skeptical to state that something does not exist because it is undergoing change. A change in sensible objects may affect a thing's qualities or appearance, however such change does not mean that a thing doesn't exist. Aristotle next argues against the Heraclitean flux in regards to constant change:

But leaving these arguments, let us insist on this, that it is not the same thing to change in quantity and in quality. Grant that in quantity a thing is not constant; still it is in respect of its form that we know each thing. (*Metaphysics*, Book Gamma 1010^a22-25.)

If there is a sensible object that is constantly undergoing change, it is important for us to discern what kind of change is taking place. Is the object changing in quantity or quality? If the Heraclitean river is changing in relation to quantity, then the river's banks may be breached by an increase in water such as in rain that becomes part of the river. If the river is changing in relation to quality, we may observe changes in the speed of the rushing water, or we may even observe the change of water from a liquid state to a frozen state, and then back again to a liquid state depending upon the temperature. The Heraclitean river may swell during heavy rains, shrink during dry spells, freeze during the winter, and the speed of the flowing river may fluctuate, but it is still a river because it has the form of a river, even though it may be subject to constant change. The Heraclitean river constantly changes; Cratylus' river doesn't

even exist, and the Aristotelian river exists throughout quantitative, qualitative and even constant change due to its underlying form.

Group A is further criticized for their lack of depth in the sensible world. All of what is perceived by men is only a tiny fraction of all that exists, and Aristotle demands that Group A doesn't make the assumption that what exists in the present changeable perceivable world of sense objects holds for the entire universe. The Aristotelian universe contains that which is unchangeable, and to assume that all immediate sense perception holds for the entire universe is to suffer from a relativism based on limited perceptions. If we can persuade those in Group A that there exists something that is changeless, then they will no longer have difficulties in their thinking concerning perception, knowledge, and truth. Aristotle illustrates the absurdity inherent in denying the PNC:

Indeed, from the assertion that things at the same time are and are not, there follows the assertion that all things are at rest rather than they are in movement; for there is nothing into which they can change, since all attributes belong already to all subjects. (*Metaphysics*, Book Gamma 1010^a35-38.)

If the PNC weren't true, then motion itself would not be possible. A subject would contain all possible predicates, including contradictory ones, and there would be nothing into which a subject could change. All subjects would be at rest because motion itself would imply that there is a predicate or attribute that is not contained within a subject.

The next argument Aristotle uses against the relativists in Group A is directly focused on their fundamental belief in appearance as truth.

Perception is a type of sensation that shows us the world around us and assists us in obtaining knowledge concerning perceivable objects. When we perceive an object in the world, does the appearance of the physical characteristics of that object reveal to us the thing-in-itself? What is problematic for Aristotle is the appearance of the object of sensation. If there is a bed of flowers that appear to be purple from a distance, but are actually blue in color upon a closer inspection, it is not the sensation that is false, but the appearance of the subject that is being perceived that is false. We must, therefore, draw a distinction between sensation as being true and appearances which may or may not be true. The faculty of sensation does not create false appearances, and therefore we can say that the faculty of sensation itself is not false, but true, but that it is the appearances of objects which are unconditionally true due to their ability to show different appearances in the qualities of objects from different perspectives, or different times. Even if the relativists do believe such appearances are true, they cannot live their everyday lives as they do and deny the PNC.

For obviously they do not think these to be open questions; no one, at least, if when he is in Libya he fancies one night that he is in Athens, straightway starts for the Odeum. And again, with regard to the future, as Plato says, surely the opinion of the physician and that of the ignorant man are not equally weighty, for instance, on the question whether a man will get well or not. (*Metaphysics*, Book Gamma 1010^b110-15.)

Perhaps if the relativists in Group A were to analyze their daily activities, and were told that what they do in their everyday life is in accordance

with the PNC, and that what appears to them is not necessarily true, then they would indeed be persuaded to stop denying it.

Sensation is not limited to perception. The other sense organs allow us to hear, smell, feel, and taste things, and we make sense of the objects of perception through an implicit acceptance of the PNC. Although an appearance of an object may or may not be true, the senses do not, at any time, ever assert contradictory qualities of the same thing at the same time. Aristotle illustrates this truth by using the sense of taste as an example. A type of wine which at one point is described as sweet, may, either through changes in the wine itself or in changes in the person, be sweet at one time, but not sweet at another time. The actual flavor of the wine may change, yes, but not the sweetness itself. The sweetness of the wine holds true for the flavor it held at a certain time, and our sense of that sweetness at that time is also true. The sweetness is also true for any possible future drinks or food that may potentially exhibit that flavor. It is the wine itself that underwent some sort of change so that either the sweetness is absent and has been replaced by another flavor such as sourness or bitterness, or the person that drank the wine has gone through some bodily change so that the wine doesn't seem sweet anymore. Again, it is the wine or person that consumed the wine that changes so that the flavor is sensed to be sweet or not, the sweetness itself and the sensation of sweetness at a particular time do not change. Those that deny this distinction also deny the idea that a thing has a substance. Without substance, a thing isn't necessarily a this

or a that, for it lacks defining qualities and attributes which differentiate it from other things.

In the final argument against the Group A relativists Aristotle presents his theory of perception:

And, in general, if only the sensible exists, there would be nothing if animate things were not; for there would be no faculty of sense. The view that neither the objects of sensation nor the sensations would exist is doubtless true (for they are affections of the perceiver), but that the substrata which cause the sensation should not exist even apart from sensation is impossible. For sensation is surely not the sensation of itself, but there is something beyond the sensation, which must be prior to the sensation; for that which moves is prior in nature to that which is moved, and if they are correlative terms, this is no less the case. (*Metaphysics*, Book Gamma 1010^b 30-1011^a 2.)

The relativists believe that only sensible objects are what exist. Sensible objects are only observable by sensible beings, and if the world were empty of sensible beings, the faculty of sense itself wouldn't exist, and therefore the world wouldn't exist either, and the result would be that nothing exists. Politis calls this a 'causal realist theory of sense perception.'³⁸ By illuminating that the ordinary everyday world as we experience it is not filled with simultaneous contradictions in a given object at a particular time, Aristotle appeals to the relativists' common sense and given understanding of the world in order to refute them.

d. *Metaphysics* Book Gamma, Ch. 6 and the Group B relativists

Book Gamma chapter six is dedicated to refuting the Group B relativists. These relativists need to be compelled into accepting the PNC. Aristotle states that these people insist on the impossible, i.e. answers to questions which are either meaningless to ask or not possible to demonstrate:

There are, both among those who have these convictions and among those who merely profess these views, some who raise a difficulty by asking, who is the judge of the healthy man, and in general who is likely to judge rightly on each class of questions. But such inquiries are like puzzling over the question whether we are now asleep or awake. And all such questions have the same meaning. These people demand that a reason shall be given for everything; for they seek a starting-point, and they wish to get this by demonstration, while it is obvious from their actions that they have no conviction. But their mistake is what we have stated it to be; they seek a reason for that for which no reason can be given; for the starting-point of demonstration is not demonstration. (*Metaphysics, Book Gamma*, 1011^a3-14.)

The Group B relativists may seem like the more difficult of the two groups to convince, since they insist on proofs by demonstration and mistakenly believe that they are correct. Aristotle, however, believes that this group of relativists may be compelled fairly easily, since the truth of the PNC is so apparent. There will be others within this group, however, that will insist on an argument, and a demonstration of the PNC. Aristotle dismisses Group B's insistence on an impossible demonstration rather quickly compared to the Group A relativists because of the absurdity and inherent contradictions within their demands, and the meaninglessness within their questions. The inherent contradictions of the Group B

relativists appear in their demands for a demonstration of the PNC. If, according to the relativists, all knowledge and truth is different for all men, at different times, then their demand itself for a universally true demonstration of the PNC is an outright contradiction for what the relativists believe in. To be a relativist and to ask for a demonstration of the PNC is to demand a type of knowledge which they themselves say doesn't exist. Therefore, if a relativist demands a positive demonstration, one may simply state that even a request for such a demonstration is contradictory to his or her belief system. If, according to the relativists, truth and falsity are one and the same and truth is different for all men at all times and is dependent on changing appearances, then any demonstration will not prove satisfactory. Instead of providing a series of arguments against the Group B relativists, as we saw Aristotle did when confronting the Group A relativists, he shows the initial absurdity in their demands by exposing the inherent contradictions in their thought. By doing this, it isn't necessary to engage in a series of arguments in favor of the PNC, for the Group B relativists' demand is so illogical that Aristotle finds it unnecessary to argue with those that are so mistaken in their thought. The only action we must take against the Group B relativists is to listen to them. If they say something of significance while arguing against the PNC, their statements will provide a negative demonstration of it. The elenctic refutation is made use of, however the burden of proof rests upon the relativist, not the demonstrator. By uttering something of significance, the relativist creates

a self-refutation of his own argument by unknowingly making use of the PNC within his argumentation while simultaneously attempting to disprove it. Therefore, we then have a negative demonstration of the PNC and the Group B relativists either accept the PNC as truth or continue arguing just for the sake of argument against something they know is true.

In conclusion, the PNC holds for things, their definitions, and their ontological status, and is therefore the first principle which Aristotle is seeking in the search for wisdom. The principle of non-contradiction supersedes all other first principles, and this discovery of Aristotle's meant that certain Socratic and Presocratic philosophers' theses must be called into question. This is what Aristotle indeed does in *Metaphysics* Book Gamma chapters four, five, and six. It is the PNC that is the first principle of first philosophy, and because of this, the study of metaphysics will assume certain *a priori* logical and ontological truths from which all further study in first philosophy develops. We have explored in detail above what those certain truths are. The PNC provides an indemonstrable yet true account of things in the world. Negative refutation is employed as a way to show its certainty. By realizing the certainty of the PNC, one is able to distinguish things and the status of things in the world, and by doing so one can make progress in the study of first philosophy. The PNC becomes a necessary tool and is a first principle in the study of the science of being *qua* being. It is, therefore, from necessity, the elenchus, and *a priori* certainty that we commence an

investigation into first philosophy. The discovery of the PNC allows for an understanding of things in the world, and this understanding of things and their accompanying definitions allows for the study of metaphysics. Opponents of the PNC are quickly refuted negatively. Therefore, to the question of the 2nd aporia, “Is it the task of one single science to investigate the first principles of being and the principles of demonstration?” the answer is a definite yes. The first principle, the PNC, shows us that each thing must have a certain definition. Furthermore, the PNC lets us investigate the ontological status of things. It lets us say with certainty characteristics, attributes, definitions, and whether or not a thing exists. The PNC and other first principles of logic belong to the study of being *qua* being directly because they help us answer questions related to the study of being *qua* being. Our investigations proceed from the first principles of demonstration and mathematics due to the certainty of their truths. Also, our question concerning the priority of either logic or metaphysics is also answered. The first principles of mathematics and logic are prior to metaphysics because without those first principles it would be impossible to discern differences amongst things in the world, and hence it would not be possible to investigate first philosophy without first investigating the logical principles upon which the entire inquiry into metaphysics rests. Any investigation into first philosophy commences with a study into the first principles of logic and mathematics. Relativism is shown to be a flawed theory because of the certainty of the PNC, and therefore all

relativists made at least one of the following mistakes: 1) incorrectly believed what was wrong to be true 2) ignored their common sense beliefs and understanding of the world and the things in it 3) hadn't yet discovered the most prior of the first principles, the PNC and 4) remained silent like a plant that exists but without thought, logic, or self-awareness. The PNC, the single most prior of the first principles, also therefore destroys the view of relativism, and all contradictory views that it encompasses. With the destruction of relativism, it is now possible to proceed with an investigation into first philosophy, keeping in mind the certainty that there is one definition for any one thing at a certain time, and to deny this would create a world without differences. By destroying relativism with the principle of non-contradiction, Aristotle truly accomplishes something unprecedented in the study of metaphysics. Relativistic opponents are reasoned into denial, and their systems become unreasonable. Logical axioms are presented as the underlying foundation upon which all subsequent investigations into metaphysics takes place, and therefore if those logical axioms are indeed employed into such a study, certain contradictions are avoided and the world and its components become defined through essential attributes and nothing is said which contradicts the PNC. With the PNC firmly established with certainty as the ultimate first principle, it is now possible to state that the science of being *qua* being does indeed have as its foundations the principles of demonstration.

Chapter Four

I. Introduction & Presentation of the Third Aporia in *Metaphysics*, Book Beta, Ch. 2

The Third Aporia (997^a15-25) Does it belong to just one single science or more than one science to investigate all substances and their attributes?

The third aporia to appear in Book Beta raises the dilemma of whether or not it is the duty of just one single science to investigate all substances and their attributes. Aristotle presents the puzzle as follows:

In general, do all substances fall under one science or under more than one? If the latter, to what sort of substance is the present science to be assigned? On the other hand it is not reasonable that one science should deal with all. For then there would be one demonstrative science dealing with all attributes. For every demonstrative science investigates with regard to some subject its essential attributes, starting from the common beliefs. Therefore to investigate the essential attributes of one subject, starting from one set of beliefs, is the business of one science. For the subject belongs to one science, and the premises belong to one, whether to the same or to another; so that the attributes also are investigated either by these sciences or by one derived from them. (*Metaphysics*, Book Beta 997^a15-25.)

This puzzle, like the first and second aporiai, raises problems that lie within an investigation concerning the possibility of metaphysics, i.e., whether or not the science of being is in itself a possible science. For Aristotle, this is an important puzzle, for if no resolution is discovered,

then we will be unable to define what the objects of investigation are for metaphysics, and because of that, any attempt at an investigation into the science of being will not be possible. Both choices (one science to investigate all substances or many sciences to investigate all substances) at first seem problematic. If there are several or many sciences that investigate all substances, we will have great difficulty in determining which substance would be investigated by first philosophy. The other side to this dilemma is equally troublesome, as illustrated by Reale.

If we admit, on the contrary, the existence of a single science for all substances, we will fall into the following absurdity. Every demonstrative science is concerned with a substrate (*hupokeimenon*) and it inquires into the essential properties and accidents (*ta kat'hauta sumbebêkota*) of this substrate by moving from general logical principles. In addition it belongs to one and the same science to study all the accidents or properties of one and the same substrate, beginning-it is understood-from the same general principles of demonstration. Now if there were a single science for all substances, there would be, as a consequence, only one substrate and all the accidents or properties would be reduced to such a substrate. Therefore they will of necessity be contained in that same single science. And this is absurd, because then all the sciences would be reduced to this single one.³⁹

This aporia raises the problem of the subject matter of first philosophy, i.e., substance. If we are to investigate the first principles and causes through first philosophy, we must know what the proper substrate is that corresponds to that science. Without such knowledge concerning the substrate, it will not be possible to know exactly what it is we are supposed to be investigating.

II. Solution to the Third Aporia in *Metaphysics* Book Gamma, Ch. 2 & 3

The solution to the third aporia is found in Book Gamma, chapters two and three. In order to avoid a multiplicity of sciences that deal with the same subject, and to avoid having one science encompass all subjects, Aristotle creates a classification of subjects that are interconnected within one discipline and are based on the fact that 'there are many senses in which a thing may be said to 'be', but they are related to one central point, one definite kind of thing, and are not homonymous.'⁴⁰ As all words and things that are based in the medical sciences are related to health, such as nutrition (preservation of health), medicine (production of health), vitality (symptom of health) and human being (capable of being healthy), so too is the case with being and beings.

So, too, there are many senses in which a thing is said to be, but all refer to one starting-point; (*men ál' hapan pros miân arkhên*) some things are said to be because they are substances, others because they are affections of substance, others because they are a process towards substance, or destructions or privations or qualities of substance, or productive or generative of substance, or of things which are relative to substance, or negations of some of these things or of substance itself. It is for this reason that we say even of non-being that it *is* non-being. (*Metaphysics*, Book Gamma, 1003^b5-11.)

What we must be aware of in searching for an answer to this puzzle is that we are concerned with the many senses of how being is realized and expressed, not only substance itself. And because of that, we need to have one science that has as its subject of investigation not only with substance, but with all the qualities, accidents and predications related to substance, including not only the positive expression of being, but also the negative and privative aspects of being. All of the many things that are related to health can be investigated in medical science, and the same is true for all other things including being.

For not only in the case of things which have one common notion does the investigation belong to one science, but also in the case of things which are related to one common nature; for even these in a sense have one common notion. It is clear then that it is the work of one science also to study all things that are, *qua* being. But everywhere science deals chiefly with all that which is primary, and on which the other things depend, and in virtue of which they get their names. If, then, this is substance, it is of substances that the philosopher must grasp the first principles and the causes. (*Metaphysics*, Book Gamma, 1003^b12-19.)

It has now been established that it is indeed the duty of one science to investigate all substances and their attributes. However, each science has a primary subject matter, and the primary subject matter for the science of being *qua* being is substance. It is through an investigation into this primary subject matter, substance, that we can come to understand what the causes and first principles of first philosophy are. The next example Aristotle uses to illustrate his point of division within one science is a comparison with the science of grammar.

Now for every single class of things, there is one perception, so there is one science, as for instance grammar, being one science, investigates all articulate sounds. Therefore to investigate all the species of being *qua* being, is the work of a science which is generically one, and to investigate the several species is the work of the specific parts of the science. (*Metaphysics*, Book Gamma, 1003^b 19-22.)

Grammar is a single science that investigates all spoken sounds. Within the science of grammar there exist several different branches of study, such as diction and phonology. The same is true for philosophy. First philosophy has as its subject matter primary substance. Within first philosophy we may investigate ‘the many senses in which a thing may be said to “be,”’⁴¹ by directing an investigation into either the *epistêmê* of being *qua* being or theology, which are both part of *prôtê philosophia*. Concerning the division of philosophy into several different branches of study Aristotle says the following:

And there are as many parts of philosophy as there are kinds of substance, so that there must necessarily be among them a first philosophy and one which follows this. For being falls immediately into genera; and therefore the sciences too will correspond to these genera. For ‘philosopher’ is like ‘mathematician’; for mathematics also has parts, and there is a first and a second science and other successive ones within the sphere of mathematics. (*Metaphysics*, Book Gamma 1004^a2-9.)

We see now that first philosophy is so named because of its priority over other branches of philosophy. Not only does first philosophy have as its subject matter being *qua* being, but it is also the duty of first philosophy to inquire into the causes and first principles. All the causes and first

principles are fundamentally true for all the other branches of philosophy, and therefore first philosophy takes priority over them.

The first causes and principles are discovered through an inquiry into substance, and it is therefore an investigation into substance through which we can discover the first principles and causes which hold true for all branches of philosophy.

Aristotle further elaborates on the priority of first philosophy in Book Gamma chapter three:

We must state whether it belongs to one or to different sciences to inquire into the truths which are in mathematics called axioms, and into substance. Evidently the inquiry into these also belongs to one science, and that the science of the philosopher; for these truths hold good for everything that is, and not for some special genus apart from others. And all men use them, for they are true of being *qua* being, and each genus has being. But men use them just so far as to satisfy their purposes; that is, as far as the genus, whose attributes they are proving, extends. Therefore since these truths clearly hold good for all things *qua* being (for this is what is common to them) he who studies being *qua* being will inquire into them too. (*Metaphysics*, Book Gamma 1005^a19-30.)

Again, we see that first philosophy's subject matter, substance, and the first causes of principles of things, belong to one science, the science of the philosopher. When we study being *qua* being, we are making an inquiry into the most general, and most universal subject matter. Such a universal inquiry will, at its most fundamental level, also inquire into the universal truths that are the foundation of first philosophy, and all other sciences. Although scientists within the particular sciences conduct research with the first principles and causes as the foundation of such studies, they do not conduct actual investigations into such first

principles. Within the particular sciences, the scope of inquiry is specific, research is limited to a particular substance or part of being that, while dependent upon first principles and truths in order to make progress, in no way whatsoever attempts an investigation into those first principles themselves. We now see that it is the duty of the philosopher, by conducting an inquiry into the most universal truths through first philosophy, to determine the first principles and causes of all things.

Therefore, the 3rd aporia is now solved. To the question, 'do all substances fall under one science or under more than one?',⁴² we find the answer contains a classification and division of one science. Yes, it is the duty of one science to study all substances, however, such a science must be divided up into parts, or branches, depending upon the substance or part of being that is under inquiry. In the case of philosophy, it is the duty of first philosophy to study substance itself, i.e., being *qua* being, and the first principles and causes. However, there are other parts of philosophy that study other substances. Determination of what the first principles and causes are is necessary not only for a clear understanding of the subject of inquiry for first philosophy, but also for any inquiry in philosophy to be deemed philosophical and to be able to be critiqued rationally and logically by other philosophers that contemplate and accept the universal rules of thought.

Practitioners of philosophical inquiry, regardless of their branch of philosophy, all share several things in common. First, all such practitioners accept the first principles and causes. Second, they all study

substance or substances insofar as they are related to that particular study. In all the branches of philosophy, whether the subject of inquiry is substance itself, an inquiry into the 'axioms of mathematics,' an attribute of substance, or individual substances, there is something that is underlying continually. It is substance itself, and it unifies all of the branches of philosophy into one discipline called *philosophia* because of its presence as both an explicit and implicit (underlying) subject matter, and that because by studying substance we can come to know the first principles and causes, which are universally and unconditionally accepted as true. The third commonality amongst practitioners of philosophical inquiry is the search and love of wisdom. Wisdom, according to Aristotle, is 'knowledge about certain causes and principles.'⁴³ Therefore, for a practitioner of philosophical inquiry to gain wisdom, one must grasp the first principles and causes. All practitioners of philosophical inquiry may partake in their studies on an individual basis, (as a substance,) yet their results are deemed worthy of being called philosophical by other philosophers that make judgments based on rationality and logic, which are based upon a foundation of first principles and causes.

Therefore, as a review of the third metaphysical puzzle presented in Book Beta, yes, it is the job of one science to study all substances. The proper science is called first philosophy, and first philosophy studies all substances in a very general and universal way. First philosophy studies all substances in the sense that they are, or, contain being. First

philosophy, therefore, is unitary in the fact that it studies all substances, yet it is structured in two stages, the *epistêmê* of being *qua* being and theology. The study of philosophy in general also contains different branches within it that study various aspects of substance and of all substances insofar as those particular studies are related to substance, either as substance itself, attributes of substances, through substance as an inquiry, or as substance as an underlying subject within that study.

Chapter Five

I. Introduction & Presentation of the Fourth Aporia in *Metaphysics*

Book Beta, Ch. 2

The Fourth Aporia (997^a26-33) Is the proper subject of our investigation substance only, or also the essential attributes of substance?

This is the fourth and final puzzle that deals with the possibility of there being a science called first philosophy. If this puzzle can be resolved positively, then we can finally and without any doubt be completely assured that indeed there is a science called first philosophy that has as its subject of investigation of being *qua* being. First philosophy is a science that investigates being in the most general way, as opposed to the particular sciences that investigate only a part of being. If first philosophy investigates only substance, then do we need a second science to investigate the attributes, or characteristics, of substance?

The fourth metaphysical puzzle found in Book Beta concerns substances and their attributes and is presented as follows:

Further, does our investigation deal with substances alone or also with their attributes? I mean for instance, if the solid is a substance and so are lines and planes, is it the business of the same science to know these and to know the attributes of each of these classes (the attributes which the mathematical sciences prove), or of a different science? If of the same, the science of

substance also must be a demonstrative science; but it is thought that there is no demonstration of the essence of things. And if of *another*, what will be the science that investigates the attributes of substance? This is a very difficult question. (*Metaphysics*, Book Beta 997^a26-33.)

By addressing mathematics as a science that deals with substance, and the attributes of mathematical substances, such as lines and planes, Aristotle proposes a significance to attributes and the role they play in scientific investigation. It is the attributes themselves that help contribute to the proofs of those substances, and they would therefore seem to qualify for study under the same science. Additionally, it is difficult to think of what kind of science would be reserved for a study of the attributes of the substances of another science.

II. Solution to the Fourth Aporia in *Metaphysics* Book Gamma, Ch. 2

The solution to the fourth aporia is found in Book Gamma, chapter two.

Aristotle states:

It is evident then that it belongs to one science to be able to give an account of these concepts as well as of substance. This was one of the questions in our book of problems. And it is the function of the philosopher to be able to investigate all things. For if it is not the function of the philosopher, who is it who will inquire whether Socrates and Socrates seated are the same thing, or whether one thing has one contrary, or what contrariety is, or how many meanings it has? And similarly with all other such questions. Since, then, these are essential modifications of unity *qua* unity, and of being *qua* being, not *qua* numbers or lines or fire, it is clear that it belongs to this science to investigate both the

essence of these concepts and their properties. (*Metaphysics*, Book Gamma, 1004^a33-1004^b8.)

This is the logical solution to the fourth aporia. . The study of being *qua* being studies everything about being *qua* being in a general sense, and because of that, it studies the attributes or properties of substances. Such a solution also fits neatly in the Aristotelian scientific view of the world. Substances are classified according to their specific science, and there is no unnecessary extrapolation of additional sciences for the attributes of the subject matter for each particular science. The subject matter contained in the study of being *qua* being is investigated by a philosopher. He is qualified to do so in the sense that it is the job of the philosopher, over and above anyone else, to investigate being in its most general sense, and any permutations which may arise from particular instances in those studies.

Part Three: A Fundamental Aporia Within Metaphysics

Chapter Six

I. Introduction & Presentation of the Aporia in *Metaphysics* Book

Beta, Ch. 2

The Fifth Aporia (997^a34-998^a19) Do only sense-perceptible things exist, or in addition to these, do non-sense-perceptible things also exist?

This is the first of the puzzles that deals with a dilemma within metaphysics, as opposed to the previous four puzzles that dealt basically with the possibility of there being a subject matter which can properly be called metaphysics. As we have seen through an analysis of the first four aporias, there is indeed such a science called first philosophy, i.e. metaphysics. The fifth aporia is much longer than the first four, due to the content of the puzzle itself, and the solution lies not only within *Metaphysics*, but also throughout Aristotle's corpus. The two horns of the dilemma of this aporia are on the one hand, the claim that only sense-perceptible things exist, and on the other hand, the claim that in addition to those sense-perceptible things, that non-sense-perceptible things also exist. We might say that this is the most important of the fifteen aporia to appear in Book Beta, both historically and philosophically, for this is the puzzle that Aristotle dedicated a great deal of his corpus to, by criticizing Plato's Forms and proposing his own theory, hylomorphism. It

is through an analysis of the fifth aporia by which we can discern Aristotle's criticisms of Plato's Forms, and search for Aristotelian solutions. Again, such a thorough analysis of this puzzle will take this dissertation outside of *Metaphysics* in order to find parts of Aristotle's solution. Prior to finding the solution, however, we should first discuss the puzzle as presented by Aristotle.

Further, must we say that sensible substances alone exist, or that there are others besides these? And are substances of one kind or are there several kinds of substances, as those say who assert the existence both of the Forms and of the intermediates with which they say the mathematical sciences deal? –In what sense we say the Forms are causes and substances in themselves has been explained in our first remarks about them; while this presents difficulties in many ways, the most paradoxical thing of all is the statement that there are certain things besides those in the material universe, and that these are the same as sensible things except that they are eternal while the latter are perishable. For they say there is a man-in-himself and a horse-in-itself and health-in-itself, with no further qualification, –a procedure like that of the people who said there are gods, but in human form. For they were positing nothing but eternal men, nor are they making the Forms anything other than eternal sensible things. (*Metaphysics*, 997^a34-997^b12.)

Upon reading this introductory passage of the fifth aporia, it becomes evident that there are several layers to this puzzle. The first problem to be raised is the question of whether or not anything else besides sensible substances exists. On one side of the aporia resides the argument that nothing besides sensible substances exists. Through a strict observation of the sense-perceptible world, it may be possible for some philosophers to account for a causality based entirely on sensible substances. On the other hand, it also seems possible that non-sense-

perceptible substances also exist. This is basically the philosophy of Aristotle's teacher, Plato, and Aristotle immediately criticizes his teacher's claim that the Forms exist in some separate, eternal realm. Aristotle's main criticism in the above passage concerns how Plato basically copied the idea of a sensible, perishable substance and attempted to turn it into a non-sensible, eternal substance. Even on that point, Plato failed, according to Aristotle, because by extrapolating a Form from a sensible substance only creates an eternal, sensible substance, not a non-sensible eternal substance. Plato's theory of Forms is one attempt to answer the fifth aporia; however, Aristotle thinks that such a theory fails because of its paradoxical results. Paradoxical results create more puzzlement, not a resolution to the aporia or a dissolution of wonder concerning that puzzle; therefore, the theory of Forms is not a correct solution. For the purposes of clarity and analysis, it will be useful here to briefly present Plato's own ideas on the theory of Forms. For Plato, it is the Forms that exist, and they are eternal, non-sensible, and unchanging. In the realm of the Forms, there is a form of man, of beauty, of justice, and it is these Forms that all changing things in the sensible world strive towards. Plato discusses the Form of beauty in a section of the *Symposium*.

But I will do my utmost to inform you, and do you follow if you can. For he who would proceed aright in this matter should begin in youth to visit beautiful forms; and first, if he be guided by his instructor aright, to love one such form only-out of that he should create fair thoughts; and soon he will of himself perceive that the beauty of one form is akin to the beauty of another; and then if beauty of form in general is his pursuit, how foolish would he be

not to recognize that the beauty in every form is one and the same! And when he perceives this he will abate his violent love of the one, which he will despise and deem a small thing, and will become a lover of all beautiful forms; in the next stage he will consider that the beauty of the mind is more honourable than the beauty of the outward form. So that if a virtuous soul have but a little comeliness, he will be content to love and tend him, and will search out and bring to the birth thoughts which may improve the young, until he is compelled to contemplate and see the beauty of institutions and laws, and to understand that the beauty of them all is of one family, and that personal beauty is a trifle; and after laws and institutions he will go on to the sciences, that he may see their beauty, being not like a servant in love with the beauty of youth or man or institution, himself a slave mean and narrow-minded, but drawing towards and contemplating the vast sea of beauty, he will create many fair and noble thoughts and notions in boundless love of wisdom; until on that shore he grows and waxes strong, and at last the vision is revealed to him of a single science, which is the science of beauty everywhere. (*Symposium*, 210.)

To understand the world, according to this passage, one must go beyond the sensible to the abstract. A person that has no knowledge of the Forms cannot see that beauty in an individual thing, such as a beautiful person, is the same beauty in an institution, or a beautiful law. To truly understand beauty, Plato urges us in this passage to investigate and contemplate the form of beauty, by which all sensible things that are beautiful participate in. The method of discovery of the Form of beauty is quite precise. First, the student, if instructed properly, will, in his youth, 'visit beautiful forms.'⁴⁴ If the student studies architecture, he will observe beautiful structures, and his instructor will tell him to focus on one particular type of beautiful structure, such as stone houses. From there, through contemplation, the student will realize that the beauty that is part of all stone houses is the same beauty, not individual beauty, but the eternal Form of beauty. Through deeper contemplation the student will

realize that abstract beauty is itself better, or more honorable, than beauty found in concrete things. He will contemplate the beauty found in laws and institutions, and this will further lead to the realization of a unified, universal science, which reveals a universe of truth and beauty.

There is no doubt that Aristotle takes issue with such claims. What those issues exactly are, however, are debatable. As Politis explains, the specific problems within this aporia and the position Aristotle ascribes to are not as apparent as one might think.

The way in which the aporia is presented may suggest that Aristotle sides entirely with the one side (only sense-perceptible things are real), and that it is Plato and the Platonists that take up the other side (also non-sense-perceptible things are real). He may also give the impression that no reconciliation is possible between the two sides. But these impressions are misleading. For Aristotle will argue, just like Plato, that explanations and explanatory knowledge requires the reality of non-sense-perceptible and changeless things. The disagreement with Plato is rather about how the two types of things-changing and sense-perceptible things as opposed to changeless and non-sense-perceptible things- are related to each other. In particular, are they two sets of distinct things, so that it is in this sense that non-sense-perceptible things exist 'in addition to' or 'besides' (*para*) sense-perceptible ones? This is Plato's view, as Aristotle understands it. Or, can a single thing be both sense-perceptible and non-sense-perceptible, both changing and changeless?⁴⁵

Politis raises an interesting point in the above passage. This aporia is aimed at resolving the conflict of the relationship between sense-perceptible things (changing things) and non-sense-perceptible things (changeless things). Although in the final account we may say that Aristotle rejects the Platonic Forms, it may be more prudent to assert that he undertakes a criticism of the Forms rather than a complete refutation

in order to propose a system based more on logic rather than conjecture. Aristotle is quite aware of both the virtues and deficiencies of Plato's Forms as seen in this passage from the *Metaphysics* Book Zeta chapter sixteen:

Now of these things being and unity are more substantial than principle or element or cause, but not even the former are substance, since in general nothing that is common is substance; for substance does not belong to anything but to itself and to that which has it, of which it is the substance. Further, that which is one cannot be in many things at the same time; but that which is common is present in many things at the same time; so that clearly no universal exists apart from the universal.

But those who say the Forms exist, in one respect are right, in saying the Forms exist apart, if they are substances; but in another respect they are not right, because they say the one *in* many is a Form. The reason for their doing this is that they cannot say what are the substances of this sort, the imperishable substances which exist apart from the individual and sensible substances. They make them, then, the same in kind as the perishable things (for this kind of substance we know)- man himself and horse itself, adding to the sensible things the word 'itself'. Yet even if we had not seen the stars, none the less, I suppose, would there be eternal substances besides those which we knew; so that now also if we do not know what eternal substances there are, yet it is doubtless necessary that some should exist. Clearly, then, no universal term is the name of a substance, and no substance is composed of substances. (*Metaphysics*, Book Zeta, 1040^b20-1041^a5.)

Again, it is important to note that there is no complete explicit rejection of the Forms. By positing the Forms, Plato is correct in thinking that there is something apart from the matter that is necessary for a thing's existence. He errs, however, in universalizing the same Form for all things. When considered mathematically, logically, and empirically, no one would correctly posit that one thing would exist as multiplicities in countless particulars at the same time. Aristotle finds this somewhat absurd, and

dedicates much of his own work to defending his own thesis. In positing the Forms, we are unable to tell what a thing's substance is, because of the disconnection between our concrete, sensible world, and the eternal, abstract world of the Forms.

Additional objections are raised in the presentation of this aporia:

Further, if we are to posit besides the Forms and the sensibles the intermediates between them, we shall have many difficulties. For clearly on the same principle there will be lines besides the lines-in-themselves and the sensible lines, and so with each of the other classes of things; so that since astronomy is one of these mathematical sciences there will also be a heaven besides the sensible heaven, and a sun and a moon (and so with the other heavenly bodies) besides the sensible ones. Yet how are we to believe these things? It is not reasonable even to suppose these bodies immovable, but to suppose their *moving* is quite impossible. And similarly with the things of optics and mathematical harmonics treat. For these also cannot exist apart from the sensible things, for the same reasons. For if there are sensible things and sensations intermediate between Form and individual, evidently there will also be animals intermediate between animals-in-themselves and the perishable animals. (*Metaphysics*, Book Beta, 997^b12-24.)

This section of the presentation of the fifth aporia raises several difficulties related to the theory of Forms. First, if the Forms are posited, the problem of an infinite regress arises. Such an infinite regress arises if, in addition to the Forms, and sensible things, we state that intermediates exist. In the mathematical sciences, it will be impossible to determine what the objects of inquiry are. In the study of mensuration, in addition to the sensible, perceptible lines, and the forms of the lines themselves, there will exist lines that are intermediates⁴⁶, i.e., they exist between the forms and the sensibles. Such problems exist also in the other mathematical sciences, as in astronomy, there will be additional

suns and moons in between the Forms and the perceptibles. By being intermediates between the Forms and perceptible things, they will resemble both in some way. By resembling the Forms they will be unchangeable and eternal, and by resembling the perceptibles, there will be many. If this is so, then the intermediates will have neither motion nor immobility. In the mathematical sciences of optics and harmonics, it is clear that such intermediates cannot exist in addition to perceptibles. If there are sensations in addition to the Forms and the perceptibles, then it follows that there will be intermediate animals between the Forms of animals and the sensible animals. Such a theory creates an infinite regress in not only the mathematical sciences, but with all sensible things in the world, and Plato was aware of these problems. He criticized, but did not abandon his theory of Forms, in his dialogue, *Parmenides*.⁴⁷ If we have an infinite regress, we will not have scientific knowledge of anything. That Plato's Forms are not the non-sensible substances Aristotle is searching for becomes apparent in the continuing presentation of the fifth aporia in Book Beta.

We might also raise the question, with reference to which kind of existing things we must look for these additional sciences. If geometry is to differ from mensuration only in this, that the latter of these deals with things that we perceive, and the former with things that are not perceptible, evidently there will be a science other than medicine, intermediate between medical-science-in-itself and this individual medical science, and so with each of the other sciences. Yet how is this possible? There would have to be also healthy things besides the perceptible healthy things and the healthy-in-itself. And at the same time not even this is true, that mensuration deals with perceptible and perishable magnitudes; for then it would have perished, when they perished. And astronomy also cannot be dealing with perceptible magnitudes nor with this

heaven above us. For neither are perceptible lines such lines as the geometer speaks of (for no perceptible thing is straight or curved in this way; for a hoop touches a straight edge not at a point, but as Protagoras said it did, in his refutation of the geometers), nor are the movements and complex orbits in the heavens like those of which astronomy treats, nor have geometrical points the same nature as the actual stars. (*Metaphysics*, Book Beta, 997^b24-998^a6.)

If intermediates do really exist, then we will be unable to determine even the subject matter for such corresponding sciences. Aristotle uses geometry and mensuration as examples to show this absurdity. If geometry deals with only non-perceptible things, and mensuration deals only with perceptible things, the science of mensuration itself will cease to exist if the perceptible lines it studies perish.⁴⁸ The same difficulties also arise for the subject matter of the science of astronomy. For those that believe that intermediates exist in between the Forms and the sensible objects, astronomy's subject matter would not be either perceptible magnitudes nor the stars above us. This is because the subject matter of the geometer does not deal with perceptibles. Furthermore, the movement and the orbits of the celestial bodies would not be able to be studied by the geometer, and geometrical points themselves would be considered to have a different nature from the celestial bodies.

The third part of the presentation of the fifth aporia raises the problem of the intermediates existing within perceptible things. It is to

this problem that Aristotle dedicates the remainder of the presentation of the aporia in Book Beta.

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 long to enumerate, but it is enough to consider such points as the following:-It is not reasonable that this should be so only in the case of these *intermediates*, but clearly the *Forms* also might be in the perceptible things; for the same account applies to both. Further, it follows from this theory that there are two solids in the same place, and that the intermediates are not immovable, since they are in the moving perceptible things. And in general to what purpose would one suppose them to *exist*, but to exist *in* perceptible things? For the same paradoxical results will follow which we have already mentioned; there will be a heaven besides *the* heaven, only it will be not apart but in the same place; which is still more impossible. (*Metaphysics*, Book Beta 998^a6-19.)

While Aristotle does not exactly say who proposes the view that the intermediates exist within perceptible things, one candidate is surely Plato. In addition to Plato, Madigan suggests that the Pythagoreans and Eudoxus are also possible candidates.⁴⁹

In this puzzle we can see that there are three distinct issues related to the criticism of Plato's theory of the Forms. The first issue raised is the problem of how perceptible things are related to changeless, eternal things. The second issue raised is the problem of the infinite regress that arises with the theory of the Forms. The third issue raised in this puzzle is the problem of intermediates, and how and where they exist, and the absurdity that arises if we seriously consider that intermediates exist with perceptibles. It will be these three issues that

Aristotle must address and answer to in the tripartite set of solutions to this aporia.

II. The Tripartite Set of Solutions to the Fifth Aporia

a. Criticisms of the Theory of Forms in *Metaphysics* Book Alpha, Ch. 6.

The initial step towards finding a solution is to examine Aristotle's critique of the Forms in a general way, and to determine if such a critique deems the Forms to be unscientific. The next step in finding a solution will be to propose an alternative theory that solves or resolves the issues concerning intermediates when contemplating the theory of Forms. That solution can be discovered through an investigation into the Aristotelian theory of hylomorphism as it relates to sensible substances. The third part of the solution is Aristotle's response to the question of whether besides or in addition to sense-perceptible substances, that non-sense-perceptible substances exist. This solution is found through an exposition of *Metaphysics* Book Lambda.

The criticisms and arguments against the Forms in *Metaphysics* are found initially in Book Alpha. It is here in Book Alpha that Aristotle introduces his objections to the theory of Forms, and to Plato's philosophy in general. Aristotle is laying the groundwork for his criticism of the Forms and his eventual solution to the metaphysical problems that are raised in this fifth puzzle. As Book Beta is the staging ground for an

exploration of the aporias and their accompanying puzzlement, Book Alpha functions as a staging ground in the sense of not only an introduction to the treatise as a whole but also in the sense of providing a conceptual framework such as the declaration in Book Alpha, Ch. 2 that the science we are seeking is divine in nature. This conceptual framework is offered as an alternative to the Platonic theory of Forms, and is declared prior to the criticisms and arguments against that theory in Book Alpha, chapters six and nine. Perhaps that because it has been previously determined in Book Alpha, chapter two, that there is indeed a yet unnamed divine science, it must be necessary to confront Plato's theory of Forms, and hence also his conception of eternity. Considered in this sense, Plato's theory of Forms is puzzling to Aristotle because the eternity of the Forms are posited without reference to sense-perceptible things. If we are to have an *epistêmê* of being *qua* being, then we must include in this science all being, including sense-perceptible substances.

Objection No. 1: *Metaphysics*, Book Alpha, Ch. 6 987^a29-987^b13.

It is at the beginning of Book Alpha, chapter six where Aristotle initiates a series of criticisms against the theory of Forms. As will be shown from the following passage, Aristotle objects to Plato because he was universalizing definitions without regard to changing sense-perceptible things.⁵⁰

After the systems we have named came the philosophy of Plato, which in most respects followed these thinkers, but had

peculiarities that distinguished it from the philosophy of the Italians. For, having in his youth first become familiar with Cratylus and with the Heraclitean doctrines (that all sensible things are ever in a state of flux and there is no knowledge about them), these views he held even in later years. Socrates, however, was busying himself about ethical matters and neglecting the world of nature as a whole but seeking the universal in these ethical matters, and fixed thought for the first time on definitions; Plato accepted his teaching, but held that the problem applied not to any sensible thing but to entities of another kind-for this reason, that the common definition could not be a definition of any sensible thing, as they were always changing. Things of this other sort, then, he called Ideas, and sensible things, he said, were apart from these, and were all called after these; for the multitude of things which have the same name as the Form exist by participation in it. Only the name 'participation' was new; for the Pythagoreans say that things exist by imitation of numbers, and Plato says they exist by participation, changing the name. But what the participation or the imitation of the Forms could be they left an open question. (*Metaphysics*, Book Alpha 987^a29-987^b13.)

According to the above passage, Plato was influenced in his early years by Cratylus and Heraclitus, who were both skeptics. For Cratylus and Heraclitus, the sensible world is constantly changing, and it is therefore not possible to gain absolute knowledge from constantly changing things, because when we attempt to observe something, or attempt to define something, after that moment of observation or statement of definition, the sense-perceptible thing changes, and therefore what we observed, and how we defined it, must change too. That is, the truth of a thing's nature is contingent upon its place in time, and is therefore an unreliable criteria for absolute knowledge because of the changing nature of the thing through time. Cratylus is famous for taking the flux of the Heraclitean river one step further; not only can you not step in the same river twice, it is impossible to step in it even once. He was also so skeptical of language describing the truth that he eventually resorted to

only wagging his finger and foregoing speech completely. In addition to Cratylus and Heraclitus, Plato was of course influenced by his teacher Socrates. Socrates was interested in finding universal truths in ethical matters. Plato's healthy skepticism of the sensible world's ability to find and define absolute truth, coupled by being influenced by Socrates' goal to obtain universal truths, initiated a search for truth outside of the sensible-perceptible world, and this search led to his theory of Forms. It is through his idea of participation, which Aristotle criticizes as a mere replacement word for the Pythagorean usage of imitation as pertaining to existing as in an *imitation* in relation to numbers. Plato introduces his theory of Forms in the *Phaedo*, and it is apparent in the following passages that things in the sensible world participate in Forms of those same things that exist in an unchanging, perfect realm. It also becomes apparent that Plato's ultimate goal is absolute knowledge that is known by definition. Here Socrates is posing a set of initial questions concerning being that are of an epistemological nature to Simmias:

What again shall we say of the actual acquirement of knowledge? -is the body, if invited to share in the enquiry, a hinderer or a helper? I mean to say, have sight and hearing any truth in them? Are they not, as the poets are always telling us, inaccurate witnesses? And yet, if even they are inaccurate and indistinct, what is to be said of the other senses? For you will allow that they are the best of them?

Certainly, he replied.

Then when does the soul attain truth? -for in attempting to consider anything in company with the body she is obviously deceived.

True.

Then must not true existence be revealed to her in thought, if at all?

Yes. (*Phaedo*, 65.)

The senses and the objects of possible knowledge according to the senses for Plato are inferior to the universal truths concerning existence that are obtained through abstract reasoning in pure thought. Again, we see here that Plato finds a more reasonable, stable, and unchanging truth that leads to a knowledge of things through abstract thought. It is through this activity of abstract thinking, at least for humans, through which we participate in certain Forms. Plato presents this in the continuing dialogue between Socrates and Simmias:

Well, but there is another thing, Simmias: Is there or is there not an absolute justice?

Assuredly there is.

And an absolute beauty and absolute good?

Of course.

But did you ever behold any of them with your eyes?

Certainly not.

Or did you ever reach them with any other bodily sense? –and I speak not of these alone, but of absolute greatness, and health, and strength, and of the essence or true nature of everything. Had the reality of them ever been perceived by you through the bodily organs? Or rather, is not the nearest approach to the knowledge of their several natures made by him who orders his intellectual visions as to have the most exact conception of the essence of each thing he considers?

Certainly.

And he attains to the purest knowledge of them who goes to each with the mind alone, not introducing or intruding in the act of thought sight or any other sense together with reason, but with the very light of the mind in her own clearness searches into the very truth of each; he who has got rid, as far as he can, of eyes and ears and, so to speak, of the whole body, these being in his opinion distracting elements which when they infect the soul hinder her from acquiring truth and knowledge—who, if not he, is likely to attain to the knowledge of true being?

What you say has a wonderful truth in it, Socrates, replied Simmias. (*Phaedo*, 66.)

In the sensible world, for Plato, we perceive particular manifestations of things striving towards or participating in greatness, health, and truth. We

find instances in the sensible world of great men, healthy men, and men that search for the truth in many different ways. However, in order to have knowledge of such things in an absolute way, Plato urges us in the above passage to disregard the particular instances of sense-perceptible things participating in those Forms, and to contemplate the non-sense-perceptible nature of the Forms exclusively through the faculty of mental cognition. This absolute knowledge is acquired by obtaining the perfect, non-sense-perceptible idea of the essence of each Form that is being cogitated. This process of obtaining the true essence of the Forms is actually impeded by the senses, such as sight and hearing, even if those senses are used with reason to observe and consider things in the sense-perceptible world. For Plato, we should completely disregard the senses, and, if however possible, the body itself, in order for the soul to be able to clearly and freely acquire absolute truth and knowledge. Such a radical dismissal of the sense-perceptible world is rooted in Plato by being influenced by the skepticism of Cratylus and Heraclitus, and his search for the Forms is rooted in him being influenced by Socrates' search for universal truth. As we have seen from the above introductory passage by Aristotle in his initial criticism of the theory of Forms in *Metaphysics* Book Alpha, it is not the Forms themselves that are dismissed; it is the relationship between them and the sense-perceptible things that are questioned. Even if there are sense-perceptibles participating in the Forms, what that participation actually is, and how it is achieved with separate, non-changing Forms, is entirely unclear.

Objection No. 2: *Metaphysics*, Book Alpha, Ch. 6 987^b14-22.

Aristotle's criticism of Plato's Forms continues in *Metaphysics*,
Book Alpha chapter six:

Further, besides sensible things and Forms he says there are the objects of mathematics, which occupy an intermediate position, differing from sensible things in being eternal and unchangeable, from Forms in that there are many alike, while the Form itself is in each case unique.

Since the Forms are the causes of all other things, he thought their elements were the elements of all things. As matter, the great and the small were principles; as substance, the One; for from the great and the small, by participation in the One, come the numbers. (*Metaphysics*, Book Alpha 987^b14-22.)

Here, Aristotle is first discussing the problem of intermediates as related to mathematics. These intermediates, which would exist if the theory of Forms was correct, are unlike both the sensible things and the Forms. The intermediates are unlike sensible things in that intermediates are eternal and non-changing, just like the Forms. The intermediates are unlike the Forms, however, in that there would exist a multiplicity of the same intermediate. As we will see later, mathematical objects for Aristotle do indeed exist, but they are not substances, and they are not the so called intermediates. In the second paragraph we see that for Plato the Forms are the causes of all things, and that the great and the small are principles, and substance is the One (*to hen*), or unity. Those things that are great and small, participate in the One, and from this, the

intermediates, i.e., numbers, (and even possibly the Forms themselves) are created. Here we see the introduction to the unwritten doctrine ascribed to Plato, the doctrine of the One. This unwritten doctrine is perhaps the most fundamental part of Plato's metaphysics, and he hints at the reasons why certain theses such as this doctrine should remain unwritten in the *Phaedrus*:⁵¹ For Plato, speech in several ways is superior to writing. Writing is more like a congenial pastime rather than a proper transmitter of thought. Ideas that are written down are fragile and exposed to ill treatment due to the wrong people that misunderstand those ideas or disrespect and misuse them. Words that are written in ink cannot defend themselves, it is only through speech by which an important doctrine or thesis may be defended. Also, all people are different, and one set of written words is not adequate to teach various learners that may encounter a text or thesis. Writing is adequate for recording memoirs and histories, but the dialectician, who imparts and develops his thoughts through speech to others, is the most noble, for his thoughts, like seeds that sow plants in soil, attain immortality by developing and growing in the minds of a select group of listeners, whom we would think, would continue this process or transmission of truth and knowledge, without adopting writing as a recording method. Spoken words are also like seeds in the fact that as one seed produces one plant in a potentially infinite field, so too do ideas that are conveyed through speech develop as individual thoughts in each of the listener's minds. The mind is the infinite field, where important doctrines, imparted through

the special, individualized and immortalizing capacity of speech, or, dialectic, are grown and developed. Some thoughts are too important to be written down, and this is indeed so for Plato's doctrine of the One. Although this is an unwritten doctrine, Aristotle's objection to it shows that he did indeed consider the theories from both Plato's written dialogues and from his spoken teachings with equal importance.⁵² The unwritten doctrine of the One, therefore, was of great concern to Aristotle, as evidenced by the placement of his objection to this theory near the beginning of Book Alpha, chapter six.

Objection No. 3: *Metaphysics*, Book Alpha, Ch. 6 987^b23-35.

Aristotle continues his exposition and criticism of Plato and the theory of Forms in following paragraph:

But he agreed with the Pythagoreans in saying that the One is substance and not a predicate of something else; and in saying that the numbers are the causes of the substance of other things, he also agreed with them; but positing a dyad and constructing the infinite out of great and small, instead of treating the infinite as one, is peculiar to him; and so is his view that the numbers exist apart from sensible things, while *they* say that the things themselves are numbers and do not place the objects of mathematics between Forms and sensible things. His divergence from the Pythagoreans in making the One and the numbers separate things, and his introduction of the Forms, were due to his inquiries in the region of definatory formulae (for the earlier thinkers had no tincture of dialectic), and his making the other entity besides the One a dyad was due to the belief that the numbers, except those which were prime, could be neatly produced out of the dyad as out of a plastic material. (*Metaphysics*, Book Alpha 987^b 23-35.)

In some ways Plato agrees with the Pythagoreans, and in other ways his thought differs from them. For both Plato and the Pythagoreans, the One is a substance, and not a predicate. They also held the same view that the causes of the substance of other things are numbers. However, Plato posits a dyad, i.e. the great and the small, and instead of saying that the infinite is one, the infinite for Plato comes about from the great and the small. Another difference in the thoughts of the Pythagoreans and Plato is that of intermediates. For Plato, mathematical objects are intermediates, while for the Pythagoreans, numbers are the things themselves, they do not occupy any intermediate position. Plato's divergence from Pythagorean thought is based on logical reasoning and dialectic. One result of Plato's logical thinking was that he thought duality had being because numbers, all those except prime numbers, could easily be generated out of such a duality, as if it were some changeable material. Therefore, a dyad, or the greater and the lesser, is the material cause for Plato.

Objection No. 4: *Metaphysics*, Book Alpha, Ch. 6 988^a1-7.

Although praised for his use of dialectic, Plato's theory of the Forms is again rejected by Aristotle:

Yet what happens is the contrary; the theory is not a reasonable one. For they make many things out of the matter, and the form generates only once, but what we observe is that one table is made from one matter, while the man who applies the form, though he is one, makes many tables. And the relation of the male to the female is similar; for the latter is impregnated by one

copulation, but the male impregnates many females; yet these are imitations of those first principles. (*Metaphysics*, Book Alpha 988^a 1-7.)

In order to refute the theory of Forms, we should look at two things in the natural world: craftsmanship and reproduction. In other words, appeal to the natural world itself, the sensible world, in order to raise evidence in support of such a criticism. In terms of the craftsmanship of a table, we observe that the resulting table is created by one matter, or one particular composition of materials. Furthermore, in craftsmanship, it is the master craftsman, the one that grasps all the causes, that produces many of the same thing, such as a table. His grasping of the four causes; efficient, material, formal, and final; enforms the material substrate with form to create many tables. So we see, from the work of the master craftsman, that form and matter is created many times by one. This is the opposite of Plato's doctrine. There is only one Form for all things in a kind, and if this is so, but is not verifiable in the sensible world, then we cannot fully grasp all the causes of a particular thing. And if this so, then we will not be able to say what a thing is or its status in terms of the categories. The master craftsman is creating particular desks, or tables, and as we can see in the sensible world all of the causes: the material cause is the wood itself, the efficient cause, the source of change and rest which is this case is the craftsmanship of carpentry, the formal cause is the form of a thing, i.e., the arrangement of that matter, and the final cause is the purpose of what a thing is. In terms of the master craftsman's desk, the final cause of the desk is (that for the sake of which a thing is) to be a completed

piece of furniture that provides a place of study for one person. The one master craftsman is able to create many desks because he grasps all of the above four causes.

Aristotle then looks beyond craftsmanship into biology, as a further example of evidence in the sensible world against Plato's doctrine. Like the production of desks or tables from the master craftsman, the relationship is similar between males and females. One male may impregnate one particular female. However, one male may also impregnate other females, thus creating many substances (matter and form) out of one. It seems like an obvious objection to Plato's theory, and Aristotle states even further, 'yet these are imitations of those first principles.'⁵³

So, to review Aristotle's criticism as presented in *Metaphysics*, Book Alpha chapter six, there are several points to consider. First, it is Plato's treatment of mathematics that Aristotle finds inadequate, especially when taken in consideration with the possibility of mathematical objects as being intermediates. Another problem that Aristotle raises with Plato's theory of Forms is what Plato actually means by participation. It is an unclear, and vague concept at best, and this is illustrated by the obvious disconnect that would exist between such Forms and the sensible things found in our world. Aristotle then discusses Plato's unwritten doctrine, the doctrine of the One, which is the foundation of Plato's metaphysics. By appealing again to the sensible world, this aspect of Plato's theory of Forms is also rejected. We can see

through craftsmanship and biology that it is not one separate Form that creates variations in the sensible world; it is one matter, one substance in the sensible world, that can create many substances. Another of Plato's great flaws was that he only realized two of the causes: the formal and the material causes. It is with these points in mind that we continue our investigation into Aristotle's criticism of Plato's theory of Forms.

b. Criticisms of the Theory of Forms in *Metaphysics* Book Alpha, Ch. 9

Aristotle continues his critique of Plato's theory of Forms by showing relevant weak points in Plato's theory coupled with a set of counter-arguments to which *Metaphysics*, Book Alpha chapter nine is dedicated to.

Objection No. 5: *Metaphysics*, Book Alpha, Ch. 9 990^a32-990^b9.

Aristotle commences Book Alpha chapter nine with a critique of Plato's misunderstanding of the causes that in turn led to an unnecessary doubling of everything with a separate, unchanging Form:

Let us leave the Pythagoreans for the present; for it is enough to have touched on them as much as we have done. But as for those who posit the Ideas as causes, firstly, in seeking to grasp the causes of the things around us, they introduced others equal in

number to these, as if a man who wanted to count things thought he could not do it while they were few, which has the same name and exists apart from the substances, but tried to count them when he had added to their number. For the Forms are practically equal to or not fewer than the things, in trying to explain which these thinkers proceeded from them to the Forms. For to each set of substances there answers a Form and so also in the case of all other groups in which there is one character common to many things, whether the things are in this changeable world or are eternal. (*Metaphysics*, Book Alpha 990^a32-990^b9.)

In the above passage Aristotle states that the Forms are basically an unnecessary addition to the things found in the sensible world. The Forms have the same name as the substances found in the sensible world, and by basically doubling the name of the substance and stating that it is an eternal, separate Form, does not provide any scientific knowledge in relation to the causes of the things found in the sense-perceptible world.

Objection No. 6: *Metaphysics*, Book Alpha, Ch. 9 990^b9-17.

Besides such a misunderstanding of the causes and the consequential unnecessary doubling of things in both the sensible world and eternal things outside of the sensible world, Aristotle thinks that any attempts to prove that the Forms exist are not adequate, and ultimately come to nothing.

Further, of the ways in which we prove that the Forms exist, none is convincing; for from some no inference necessarily follows, and from some it follows that there are Forms of things of which we think there are no Forms.

For according to the arguments from the existence of the sciences there will be Forms of all things of which there are sciences, and

according to the argument that there is one attribute common to many things there will be Forms even of negations, and according to the argument that there is an object for thought even when the thing has perished, there will be Forms of perishable things; for we can have an image of these.

Further, of the more accurate arguments, some lead to Ideas of relations, of which we say there is no independent class, and others involve the difficulty of the 'third man.' (*Metaphysics*, Book Alpha 990^b9-17.)

Plato's arguments for the theory of Forms leads to unreasonable, absurd results. Such a theory leads to there being Forms of all things that we can have knowledge of, even in the negative sense, and even of those things that have perished. Such a theory also leads to the Third Man Argument, which Plato himself discussed at length in the *Parmenides*. Basically, the Third Man Argument states that for any one thing, such as man, partakes in the Form of man, then it is necessary to have another Form of man in order to explain how the original Form of man and man itself (or man himself) are both man. This process would continue on *ad infinitum*. Earlier studies⁵⁴ on Plato's *Parmenides* revealed that one of Plato's possible solutions to the Third Man Argument, (TMA) lies in his analysis of Unity that is found in the second half of the dialogue, an analysis which illustrates two types of predication (*pros heauto*: a thing in relation to itself and *pros ta alla*: a thing in relation to others.) Aristotle thinks that the TMA is a difficulty⁵⁵; one of the many difficulties encountered when one posits the Platonic theory of Forms, and therefore does not accept Plato's solutions that are offered in the *Parmenides*.

Objection No. 7: *Metaphysics*, Book Alpha, Ch. 9 990^b18-991^a8.

Aristotle's next objection is related to questioning what actual advantages exist when positing the Forms. Although we are seeking knowledge concerning all things, including an explanation of things found in the world, the positing of the theory of Forms relegates such things to a secondary status when compared to the Forms.

And in general the arguments for the Forms destroy the things for whose existence we are more anxious than for the existence of the Ideas; for it follows that not the dyad but number is first, i.e. that the relative is prior to the absolute-besides all the other points on which certain people by following out the opinions held about the Ideas have come into conflict with the principles of the theory. Further, according to the assumption on which our belief in the Ideas rests, there will be Forms not only of substances but also of many other things (for the concept is single not only in the case of substances but also in the other cases, and there are sciences not only of substance but also of other things, and a thousand other such conclusions also follow). But according to the necessities of the case and the opinions held about the Forms, if they can be shared there must be Ideas of substances only. For they are not shared incidentally, but a thing must share in its Form as in something not predicated of a subject (e.g. if a thing shares in double itself, it shares also in eternal, but incidentally; for eternal happens to be predicable of the double). Therefore the Forms will be substance; and the same terms indicate substance in this and in the ideal world (or what will be the meaning of saying that there is something apart from the particulars-the one over many?). And if the Ideas and the particulars that share them have the same Form, there will be something common to these; for why should 2 be one and the same in the perishable 2's or in those which are many but eternal, and not the same in the 2 itself as in the particular 2? But if they have not the same Form, they must have only the name in common, and it is as if one were to call both Callias and a wooden image a man, without observing any community between them. (*Metaphysics*, Book Alpha, 990^b18-991^a8.)

The Platonic theory of the Forms attempts to impart knowledge of the most fundamental aspect of reality concerning objects in the sensible world, their relation to other similar things, and in general how to explain similar traits, characteristics, or behaviors amongst various kinds in a group. (All men partake in the Form of man.) By positing the Forms, however, sense-perceptible objects are relegated to a secondary status, while it is the Forms themselves that constitute the ultimate reality, and are therefore the proper candidates in our search for true, genuine knowledge. With such a theory it would seem that in addition to having Forms of substances, it is possible to have Forms of things that are not substances, and therefore to have knowledge and sciences whose subject matter is not related to substances. However, this seems totally incorrect. With the use of logic, and by relying on the opinions of predecessors, it is clear to Aristotle that there would only be Forms of substances. If what we are seeking is knowledge of what a thing fundamentally is, and we accept that a thing participates in the Form of itself, then a thing will only participate in Forms of substances, not Forms of accidents. Participation will only take place with substances, not with accidents. Aristotle proves this by showing that accidents are not participated in, i.e., they are not an essential part of a sensible object's condition for existence. Consider the idea of doubleness. If a sense-perceptible object participates in doubleness, i.e., in a distinct, secondary, disconnected type of self-subsistency, then we would have to say that such a thing also participates in eternality, or the eternal. If this

were true, then all examples of doubleness that we observe in nature would also necessarily be eternal, because doubleness and eternal would be essential to those sense-perceptible objects. Doubleness and the eternal may be accidents of sense-perceptible objects, but are not substances, and therefore there will be Forms only of substances, and not of accidents. Once we say that Forms are of substances, however, another problem arises. Any terminology that indicates a substance in the sensible world necessarily also indicates the Form of that thing in the ideal world. This creates a situation of needing to posit something over the sensible object and the Form itself, which leads to the problem called the one over the many. Although it may seem that the sense-perceptible objects and the Forms that they participate in are separate, there is something that they share in common. If this so, we will need to posit another Form that is separate from both the sensible object and the Form that it participates in so that we may explain such a commonality. Aristotle considers the problem in the context of mathematics. For Plato, mathematical objects are intermediates, i.e. they exist in between the sensible objects and the Forms. The concept of number, however, is used in a practical sense in the sensible world, and if we consider the case of duality from a Platonic standpoint, the problem of the one over many arises. Duality in the sensible world is not eternal, but perishable. Since this is so, when we consider duality that is perishable, and an eternal duality, it is necessary to consider what type of commonality they share. If we have duality in the sensible world that is perishable, the

duality of mathematical objects, i.e., the intermediates is eternal, and the eternal Form of duality, then we must have another idea of duality to explain the commonality amongst these variations found in mathematics. However, if we consider a different approach to this problem, viz., that sensible objects which participate in the Forms are not absolutely identical to the Forms themselves, what aspect of commonality do they share? We see that they share only the name, and by sharing this commonality without any consideration to the discernment of the differences between them is equal to saying that a particular person, such as a man named Callias, and a wooden image of a man⁵⁶, are both considered to be the same thing, i.e., man.

Objection No. 8: *Metaphysics*, Book Alpha Ch. 9 991^a9-19.

Aristotle's criticism continues with his arguments against Plato's theory of Forms by questioning just how do the Forms contribute to things found in the sensible world. For if the Forms contribute no further knowledge concerning things found in the world, then such a theory must be questioned.

Above all one might discuss the question what on earth the Forms contribute to sensible things, either to those that are eternal or to those that come into being and cease to be. For they cause neither movement nor any change in them. But again they help in no way towards the *knowledge* of the other things (for they are not even the substance of these, else they would have been in them), nor towards their being, if they are not *in* the particulars which share in them; though if they were, they might be thought to be causes, as white causes whiteness in that with which it is mixed. But this argument, which first Anaxagoras and later Eudoxus and certain others used, is too easily upset; for it is not difficult to

collect many insuperable objections to such a view. (*Metaphysics*, Book Alpha, 991^a9-19.)

For Plato, the Forms were necessary to account for the multiplicity of things we find in the sensible world, but Aristotle disagrees. For both eternal and perishable things, Plato's Forms seem to contribute nothing. Biological processes, such as movement or any type of change found in nature cannot be explained by the Forms. In fact, such a theory makes it more difficult to understand a thing's nature because it ignores relevant, observable data. When one posits the theory of Forms, no knowledge is acquired of a thing because the Forms are separate, and consequently so too is substance. A Platonic Form, then, cannot be a viable candidate for substance because it exists outside of the sensible world, separate from the particular sense-perceptible objects that supposedly participate in it. Furthermore, Plato's Forms cannot be causes for a thing's existence because of their necessary separation from things in the sensible world. Nor should it be correct to think that a Form can be thought of as a cause in terms of a particular thing's qualities or accidents. Aristotle illustrates this problem with the idea of color. Take the Form of white as an example. It may seem possible that somehow the separate, eternal Form of white causes whiteness in a particular sense-perceptible object by mixing with it. Such an argument was posited earlier by other thinkers like Anaxagoras and Eudoxus, and was rejected due to the apparent illogical consequences that would follow as a result.

Objection No. 9: *Metaphysics*, Book Alpha, Ch. 9 991^a20-31.

This objection is concerned with the problems that arise when considering the Forms as patterns of things.

But further all other things cannot come from the Forms in any of the usual senses of 'from'. And to say that they are patterns and the other things share them is to use empty words and poetical metaphors. For what is it that works, looking to the Ideas? Anything can either be, or become, like another without being copied from it, so that whether Socrates exists or not a man might come to be like Socrates; and evidently this might be so even if Socrates were eternal. And there will be several patterns of the same thing, and therefore several Forms, e.g. animal and two-footed and also man himself will be Forms of man. Again, the Forms are patterns not only of sensible things, but of themselves too, e.g. the Form of genus will be a genus of Forms; therefore the same thing will be pattern and copy. (*Metaphysics*, Book Alpha, 991^a20-31.)

The search for true, absolute knowledge in first philosophy is the search for scientific and logical certainty concerning being. To say that the Platonic Forms are patterns of things, or to say that things in the sensible world participate in the Forms without qualification and without explanation is unscientific, and according to Aristotle, more poetic than logical.⁵⁷ Since logic, not poetry, is the proper tool in which philosophical analysis takes place, we should confine our search for absolute knowledge to theories that are limited to an explication of the former, not the latter. Aristotle is not completely rejecting Plato's theory of Forms, however, he is taking issue with obvious gaps in the theory, gaps or issues that are related to the most fundamental aspects of the theory which Plato explained by using metaphors and meaningless words.

Aristotle is also concerned with the illogical consequences of the theory of Forms. Basically, the variations possible in relation to being and becoming do not make sense, and the Forms do not work. For whether or not Socrates exists, it may be possible for a man to come into being that resembles Socrates. This is non-sense, for Socrates himself would be required to generate offspring that resembled him. According to the theory of Forms, it may also be possible to have a man resembling Socrates come into being if Socrates were eternal. It seems as though Plato is ignoring some basic aspects of nature, such as generation and corruption, and like begets like. One man would also contain more than one Form, such as the Form of animal, and the Form of two-footed, and the Form of man itself.⁵⁸ We would also have Forms not only of sense-perceptible objects, but Forms of the Forms, and such an absurd result would not assist us in our search for absolute knowledge concerning the science of being *qua* being.

Objection No. 10: *Metaphysics*, Book Alpha, Ch. 9 991^b1-8.

In this objection Aristotle insists that the apparent disconnection between the Forms and the phenomena in the world renders such a theory to be unreasonable.

Again it must be held to be impossible that the substance and that of which it is the substance should exist apart; how, therefore, can the Ideas, being the substances of things, exist apart?

In the *Phaedo* the case is stated in this way-that the Forms are causes both of being and of becoming; yet when the Forms exist, still the things that share in them do not come into being, unless there is some efficient cause; and many other things come into being (e.g. a house or a ring), of which we say there are no Forms.

Clearly, therefore, even the other things can both be and come into being owing to such causes as produce the things just mentioned. (*Metaphysics*, Book Alpha, 991^b1-8.)

The outcome that Aristotle posits from all of these illogical results is that it is not possible for substance to be located outside of a thing. How is it possible for the Forms, or substance to exist separately? Aristotle raises this point in relation to his criticism of Plato's theory of Forms as presented in the *Phaedo*. In the *Phaedo*, Plato argues for the immortality of the soul. In particular, Plato presents four arguments⁵⁹ for the immortality of the soul, and Aristotle criticizes the conclusions concerning the Forms that Plato develops in the dialogue. Plato argues that the Forms are the causes of both of being and becoming⁶⁰, yet, if this is so, why don't all things that participate in the Forms exist simultaneously with the Forms? Furthermore, how is it possible to explain artifacts that come into existence that are thought to not have Forms? Instead of relying on separate, unchanging Forms, perhaps, Aristotle argues, that we should investigate how things in this world come into being by examining the four causes, the same four causes that also accurately describe how artifacts come into existence.

Objection No. 11: *Metaphysics*, Book Alpha, Ch. 9 991^b9-992^a9.

In this objection Aristotle argues from the standpoint of mathematics and illustrates the unreasonable results that follow when positing the theory of Forms considered in conjunction with certain

mathematical propositions. Aristotle presents the first part of this objection in the following passage.

Again, if the forms are numbers, how can they be causes? Is it because existing things are other numbers, e.g. one number is man, another is Socrates, another Callias? Why then are the one set of numbers causes of the other set? It will not make any difference even if the former are eternal and the latter are not. But if it is because things in this sensible world (e.g. harmony) are ratios of numbers, evidently there is some one class of things of which they are ratios. If, then, this-the matter-is some definite thing, evidently the numbers themselves too will be ratios of something to something else. E.g. if Callias is a numerical ratio between fire and earth and water and air, his Idea also will be a number of certain other underlying things; and the Idea of man, whether it is a number in a sense or not, will still be a numerical ratio of certain things and not a number proper, nor will it be a number merely because it is a numerical ratio. (*Metaphysics*, Book Alpha, 991^b9-20.)

Aristotle returns to the difficulties concerning numbers and mathematics if one poses the theory of Forms. One difficulty is centered on thinking that numbers are Forms and are therefore causes. When we observe multiplicities of similar existing things, such as humans, is it correct to think that they are causes just because they can be numbered? It seems illogical to think of one man being the cause of another simultaneously existing man just because they can be counted, and therefore numbered. One existing Socrates is not the cause of another existing man, namely Callias, because they belong to the same countable set. No causal connection seems possible when considered in this way. Aristotle furthers his argument by hypothetically granting potential immortality to a set. Even if it is said that one countable set is eternal, and that another is perishable, we will still have no connection in terms of causality between numbers and existing things. In other words, we count things that we see

in the world not because they are caused by the Forms of numbers, or that they exist because of their participation in any number, but because they are individuals within a countable set; a set that can be ordered and counted (but not necessarily) as a group in the sensible world.

Aristotle poses another argument within this whole objection that numbers or Forms are not separately existing things. It is not possible to consider numbers to be separate if we consider certain things, such as musical harmony, in our sense-perceptible world. A harmony is a combined set of musical notes that have corresponding numbers which represent equivalences to the proportions of those individual notes that are combined together as ratios. If things in the sense-perceptible world exist as ratios, i.e., combinations of varying proportions of different elements in one thing, then those things will consist only as numbers when considered in terms of those numbered ratios. In other words, a harmony, or a man, viz. Callias, will exist in relation to numerical ratios that correspond to certain combinations of elements that exist within them, whether they are musical notes in the case of harmony, or as worldly elements, as in the case of man. If the actual man Callias exists as a combination or as a ratio of elements, so too with the Form of man itself will exist as a ratio of the combination of certain numbers or other Forms. Numbers, then, cannot exist as pure numbers, for they will all be the result of some certain combination of ratios. The result of such a mathematical argument is that things in the sensible world do not partake in Forms of numbers because if such things are ratios, then the Forms of

such things must be ratios too, and participation with pure numbers would not be possible.

The next argument within this whole objection that Aristotle raises against the Forms concerns the problem of the one over many. Aristotle presents the remainder of this objection in the following passage.

Again, from many numbers one number is produced, but how can one Form come from many Forms? And if the number comes not from the many numbers themselves but from units in them, e.g. in 10,000 how is it with the units? If they are specifically alike, numerous absurdities will follow, and also if they are not alike (neither the units in the same number being like one another nor those in different numbers being all like to all); for in what will they differ, as they are without quality? This is not a plausible view, nor can it be consistently thought out. Further, they must set up a second kind of number (with which arithmetic deals), and all the objects which are called intermediate by some thinkers; and how do these exist or from what principles do they proceed? Or why must they be intermediate between the things in this sensible world and the things-in-themselves? Further, the units in 2 must each come from a prior 2; but this is impossible. Further, why is a number, when taken all together, one? Again, besides what has been said, if the units are *diverse* they should have spoken like those who say there are four, or two, elements; for each of these thinkers gives the name of element not to that which is common, e.g. to body, but to fire and earth, whether there is something common to them, viz. body, or not. But in fact they speak as if the One were *homogeneous* like fire or water; and if this is so, the numbers will not be substances. Evidently, if there is a One-in-itself and this is a first principle, 'one' is being used in more than one sense; for otherwise the theory is impossible. (*Metaphysics*, Book Alpha 991^b21-992^a9.)

Numbers are composed of many other numbers (e.g. the number twenty seven is composed of two sets of the number ten and seven individual ones) and therefore since numbers are Forms, then one Form also will be composed of other Forms. If, however, numbers are not

composed of combinations of different numbers, but result from the addition of identical, yet individual units, such as one, there will still be problems. Aristotle uses the number 10,000 as an example.⁶¹ Instead of thinking of the number 10,000 as explained mathematically as 10^4 , or as the square of 100, or as the multiplication of five thousand times two, consider the number as the result of ten thousand individual ones in relation to the theory of Forms. If all ten thousand units are the same, how do they combine with each other (i.e. what is their relation to each other?) in order to create another number? If the Forms of numbers are also composed of units, then it will not be possible to discern any difference amongst the Forms because they would be composed and determined by the same things. Furthermore, if such units such as the ones in the number ten thousand are thought to be different, or unequal, then various other difficulties will arise. Numbers that are the result of unequal units can't exist. If all units are unequal to each other, then they all have some type of difference within them. This difference is the result of some attributes within those units. That such units contain attributes or qualities and that they can somehow create numbers out of such an inequality does not seem reasonable.

Another difficulty Aristotle raises within this whole objection concerns how mathematical objects are intermediates, i.e. intermediates as existing in between the sensible world and the world of the Forms. If we posit the intermediates, then like how arithmetic requires another type of number in order to explain mathematical formulas, then it will be

necessary to posit a second type of number in order to explain the intermediates. If we consider the number two, which is composed of two individual units, it must be said that the number two participates in the Form of two. Yet how is it possible that the Form of two is composed of separate units? Also, how is it possible to have one complete number that is composed out of separate units?

If the units which compose numbers are unequal, then perhaps it would be better to consider them like the four classical elements of the sensible world, e.g. air, earth, fire and water, which were thought to combine in varying mixtures and resulted in objects in the sense-perceptible world. An object, or body, was the unified result of the combination of such a mixture of elements. However, such a body was not thought of as a principle, or unifying commonality of those elements, in the thought of the natural philosophers. In other words, the elements do not depend upon a body for their existence. Now, if we think of a number as composed of different units, it is not correct to think that a particular number would be the principle of those units, or vice versa. Therefore, it is also not correct to think that numbers exist as Forms. It would be unscientific to think that numbers are Forms. Whether they were composed of units which could be either equivalent or nonequivalent, there would result a unity which arises out of a duality, and this is inconsistent with Plato's theory of Forms. Numbers as Forms would be composed of multiplicities of units, units that are not principles and not Forms. Numbers as unities can exist as Forms only if Plato

grants such numbers additional definitions. Such results illustrate inherent weak points in the Platonic Forms.

Objection No. 12: *Metaphysics*, Book Alpha, Ch. 9 992^a10-23.

Aristotle's next argument against the Forms rises from a formal analysis of some fundamental explanations of geometrical extensions. If we consider such explanations from a Platonic standpoint, geometry's status as a mathematical science becomes tenable. If Platonism isn't a whole, correct science, based on the principles of logic and mathematics, then it will not provide us with true knowledge. Aristotle commences the argument as follows:

When we wish to refer substances to their principles, we state that lines come from the short and long (i.e. from a kind of small and great), and the plane from the broad and narrow, and the solid from the deep and shallow. Yet how can the plane contain a line, or the solid a line or a plane? For the broad and narrow is a different class of things from the deep and shallow. Therefore, just as number is not present in these, because the many and few are different from these, evidently no other of the higher classes will be present in the lower. But again the broad is not a genus which includes the deep, for then the solid would have been a species of plane. (*Metaphysics*, Book Alpha, 992^a10-18.)

Geometry is a mathematical science that contains formulas to determine length, area, and volume, each with their own corresponding measuring capacities that correspond to certain dimensions. Length measures things that are located in one dimension, area measures objects in two dimensions, and volume measures things three dimensionally. Aristotle analyzes those three spatial idealizations with respect to particular

properties that are part and parcel of each particular dimension. In classical geometry there are three physical dimensions, and they should be considered in terms of the number of points or coordinates necessary to represent them. The first dimension measures length, and contains and treats lines, which only require one single coordinate to denote a point. The two properties, or principles of lines are shortness and length. It can be said of shortness and length that they are types of spatial limits that apply to one-dimensional lines. It is from these two properties by which lines, which occupy one dimension, are formed. A line has a dimension of one that has shortness and length as the fundamental properties. The content of the second dimension is that of surfaces such as a plane. A plane is used as a description for two dimensions. If it is necessary to locate a point on a plane, two coordinates are required. For example, when cartographers make maps, they include both latitude and longitude as coordinate markers on the maps in order to determine points located on it. Therefore, a plane is a fundamental part of geometry, and it contains area, and the plane's area is determined by the two properties of planes: broadness and narrowness. Surfaces, or planes, that contain area, represent the second dimension. The third dimension is represented by solid objects. Solid objects that occupy the third dimension can be measured in accordance to length, area, and depth. In order to plot a point on a solid object, such as the volume of a cylinder or a cube, it is necessary to have three coordinates. The volumetric analysis of solids is determined by two basic, essential properties: depth

and shallowness. It is also true to state that in addition to points planes contain lines and that solids contain both planes and lines. Therefore, the first dimension is contained in the second, and the third dimension contains both the second and the first dimensions. Aristotle criticizes Plato's Forms with these considerations in mind. If there is a Form for lines, a Form for planes and a Form for solids, how can it be possible that such representations of the three dimensions even exist if it is necessary to have lines inside of planes, and for solids to contain both lines and planes? Do solids, in addition to participating in the Form of solid, also participate in the Forms of line and of plane? If this is true, we will be unable to determine the nature of solids. Lines, planes and solids are separate, yet interconnected representations of different dimensions, and if they all participated in each other's Forms, such representations would become indiscernible, and geometry as a science would not exist. However, geometry is indeed a mathematical science, proven through mathematical theorems and an observation of nature. Aristotle continues his criticism of Plato with this mathematical certainty in mind:

Further, from what principle will the presence of the points in the line be derived? Plato even used to object to this class of things as being a geometrical fiction. He called the indivisible lines the principles of lines-and he used to lay this down often. Yet these must have a limit; therefore the argument from which the existence of the line follows proves also the existence of the point. (*Metaphysics*, Book Alpha 992^a19-23.)

Geometry, considered non-Platonically, is a science. If geometry is Platonized, then it will not be clear what the principles of such a science would be. If we cannot determine the principles of such a science, then

we cannot gain knowledge from its contents, and any pursuit in that direction becomes meaningless. The Platonic Form for a line is an eternal, indivisible line. Yet, how can we derive lines that have points, i.e., limits, from a separate, perfect indivisible line? Limits and points must be considered in respect to each other, for limits are determined by points on a line, and a singular line can only be comprehended in terms of its own length. To say that geometrical extensions participate in Platonic Forms is to say that lines, planes and solids contain each other's Forms, and it would be impossible to determine limits, regardless of whether such limits refer to length, area, or volume. Without limits, length, area and volume as concepts, theoretically and practically, make no sense. Classical geometry, and the three representations of the three physical dimensions, are not compatible with the Platonic Forms. In fact, with the certainty of geometry as a mathematical science, the fundamental principles of that science actually assist Aristotle in his task to overturn the Platonic theory of Forms. Aristotle embraces the argument from geometry perhaps because of the abstraction that the science requires. By analyzing geometrical extensions in terms of Plato's theory of Forms, Aristotle is actually granting that universals do indeed exist, albeit without an external, eternal Idea in which concrete examples would have to participate in as a condition for existence. Aristotle shows that it is the unifying feature of limits that connects lines with planes with solids. Plato unnecessarily posits the infinite as a requirement for expressions and abstractions of finite spatial representations. The above

passage may infer an Aristotelian rejection of the infinite, but it must be remembered that this criticism is based on classical geometry, which as a criteria of its investigation measures things in terms of three dimensions (length, area, and volume) in the sense-perceptible world. In this sense we find perhaps not a fully encompassing idea of our modern understanding of the various expressions of the infinite. Limit, for Aristotle, becomes the ultimate condition of existence for that which is called not only line, but also that which is plane, or solid. By replacing Form for limit, Aristotle grants a mathematical legitimacy for his arguments concerning substance and *prôtê philosophia* by attacking Plato with a certainty not found in poetry. It is in the mathematical limit that sensible things in the world are abstracted mathematically, represented both physically and mentally through numbers and theorems, and not through unrelated, separate, infinite and eternal Forms that lack all of the causes. If we can see a sense-perceptible object in our universe and abstract it mathematically in three different dimensions, if we can create musical compositions that we are able to represent numerically, if we can chart a course on a map with coordinates, then we can impose mathematical limits on objects in our universe and then absolute knowledge is achieved. Such an absolute knowledge is based on the first principles of the mathematical sciences, and in this case, geometry. When we have a limit, whether it is represented mathematically or truly physically, we also have a necessary condition for existence. This fact is confirmed by our observation of things found in

the sense-perceptible world, especially when considered in terms of the classical microscopic and macroscopic perspectives. Perhaps pure numbers exist abstractly and universally but without substance. Instead of Plato's meta-mathematics, we have a universal, abstract and practical sense of mathematics that is universal in the sense that all things, physical, mental, numerical, musical and observable are limited and represented by mathematics. Mathematical models can be derived from the patterns of sunflower seeds or Beethoven's 9th symphony. The former is represented by Fibonacci numbers, the latter by either musical or numerical notation. Mathematics is found in nature, and thus nature itself can be expressed mathematically. The world is classified, is analyzable, and is made knowable abstractly and concretely according to the consistency and certitude that is found in the foundations of mathematics. In the above passage, Aristotle shows us indeed, that, in order to obtain certainty in thought, mathematics should be thought of as abstract models based on patterns of things found in nature and the universe. Patterns are not Forms in the Platonic sense, they are mathematical models that are derived from a formal investigation into expressions of being. Therefore where we find patterns, we necessarily find limits, and where we find limits, we find being. Plato's Forms do not succeed if argued against the science of geometry, a branch of mathematics.

Objection No. 13: *Metaphysics*, Book Alpha, Ch. 9 992^a24-33.

Aristotle continues his barrage of arguments grounded in the certainty of the sciences:

In general, though philosophy seeks the cause of perceptible things, we have given this up (for we say nothing of the cause from which change takes its start), but while we fancy we are stating the substance of perceptible things, we assert the existence of a second class of substances, while our account of the way in which they are the substances of perceptible things is empty talk; for sharing, as we said before, means nothing. Nor have the Forms any connexion with that which we see to be the cause in the case of the sciences, and for whose sake mind and nature produce all that they do produce, -with this cause we assert to be one of the first principles; but mathematics has come to be the whole of philosophy for modern thinkers, though they say that it should be studied for the sake of other things. (*Metaphysics*, Book Alpha, 992^a24-33.)

Philosophy is distinguished from other accounts of reality such as mythology or poetry due to its grounding in the certainty of first principles. This is also true to say of mathematics; it is grounded in first principles. The aim of both philosophy and of mathematics is to provide an accurate, certain, and universally valid explanation of the world. To discover the first principles of a science is to discover the causes of the objects of that science. If the Forms, again, are located outside of a thing, then we not only do not have knowledge of the thing-in-itself, but we also have no knowledge concerning how the two are related. If first philosophy is to be grounded in first principles and an absolute certainty just as mathematics is, then the causes of the objects of those sciences must be determined

formally and must be free from poetry and empty words. With the absence of an efficient cause, the theory of Forms is unable to explain the type of motion or change brought upon an object that is the result of something else. Plato also did not recognize a final cause, a cause which is found in nature through investigations into the sciences. If the objects of mathematics lack both the efficient and final causes, then they also lack both movement (i.e. change) and a goal. Therefore, it is more worthwhile for the Platonists to use mathematics for the sake of other things, namely to understand sense-perceptible things, things that supposedly are caused by the Forms. Truth in mathematics for the Platonists is acquired not by an investigation into pure mathematics, but by investigating the sense-perceptible objects that contain mathematical properties.

Objection No. 14: *Metaphysics*, Book Alpha, Ch. 9 992^a34-992^b9.

Aristotle continues his argument against the Platonists by raising problems related to substance and predication if one posits the Forms:

Further, one might suppose that the substance which according to them underlies as matter is too mathematical, and is a predicate and differentia of the substance, i.e. of the matter, rather than the matter itself; i.e. the great and the small are like the rare and the dense which the natural philosophers speak of, calling these the primary differentiae of the substratum; for these are a kind of excess and defect. And regarding movement, if the great and the small are to *be* movement, evidently the Forms will be moved; but if they are not, whence did movement come? If we cannot answer this the whole study of nature has been annihilated. (*Metaphysics*, Book Alpha, 992^a34-992^b9.)

In order to fully appreciate Aristotle's leading argument in the above passage, it is necessary to elucidate Aristotle's theory of predicables. Basically, there are five different ways in which we can speak about something. The predicables are a classification of the possible relations in which a predicate may stand to its subject. Here are the five predicables⁶²:

- 1) Definition: This is the statement concerning a thing's essence (*to ti en einai* or that which makes a thing what it is.) The Greek word is *horos*. The *horos* denotes the specific essence of a thing. In geometry, a triangle is by definition a three-sided rectilinear figure.
- 2) Genus: This is a part of the essence of a thing that is also predicable of other things different from them in kind. A triangle is a rectilinear figure, i.e., the genus of triangle is shape.
- 3) Differentia: This is the part of the essence of a thing that distinguishes one species from another within a genus. Triangles and squares are species within the shape genus and are differentiated by the number of sides.
- 4) Property: A property is an attribute that is common to all members of a class, but it is not part of the definition. A triangle's interior angles are equal to two right angles however that is not part of the definition. It is, however, universally true of all triangles.
- 5) Accident: An accident is an attribute that may or may not belong to a subject. Some triangles may have different colors, but color is

not a necessary condition related to providing a definition of triangle.

According to the theory of Forms, all things in the sensible world participate in some separate, eternal Form. However, it is difficult to agree with such a theory if a thing's substance is located externally from it. Therefore, if the objects of mathematics and mathematics itself are used for the sake of other things, perhaps the underlying matter of a substance should also be conceptualized and defined mathematically. This is because mathematical objects would be located closer to, and therefore also be related closer to sense-perceptible objects rather than the Forms. In the case of defining geometrical figures, consider the triangle. We can define triangle as a polygon that is composed of three sides. Now, if we can investigate and determine the degrees of each angle and compare that result with the two remaining angles, it is possible to determine which type of a triangle it is. For instance, if we find a triangle with two sides that are composed of equal angles it may be defined as an isosceles triangle. Therefore, we find that mathematical objects are located closer to triangles than Forms, and furthermore seem to be more relevant in terms of providing a definition for, and therefore showing what a thing's essence is, than a Form of triangle itself. The definition of a triangle reveals what its essence is, and the mathematical objects that are found within a particular triangle's angles further define what type of triangle it is. It can then be said that triangles are

predicable of angles and degrees found in mathematics, and that such mathematical results also are the differentia for that subject. For instance, the three sides of a triangle differentiate it from other polygons, such as square and rectangles. Therefore it would seem that the substance of the mathematical objects is the substance of the underlying matter, not some separate, eternal Form. The mathematical objects would also be predicated of a sense-perceptible object and not the Forms. Aristotle compares Platonism's great and small (the indefinite dyad, or duality) with the rare and the dense of the natural philosophers to illustrate this point. For some of the natural philosophers, rarity and density distinguished the primary differences found in the substratum, i.e. matter, and were thought of as a kind of excess and defect. Sense-perceptibles that have very little matter in them are called rare, and those that contain a large quantity of matter are called dense, if we compare sense-perceptibles that have the same dimensions. Rarity and density are the two differentiae for matter for the natural philosophers. The great and the small also differ in accordance to the amount of matter, and can be also thought of as a kind of excess and defect in regards to the quantity of matter in an object. Now, if the differentia were considered to be more than the matter, i.e., mathematical objects, then the substance or matter would be predicated as a differentia of matter, instead of being just called matter itself. The theory of Forms creates an unnecessary predication of substance upon substance, i.e. predicating matter upon itself. The differentiae are matter itself, and it is therefore unnecessary to

predicate mathematical objects of the differentiae as a separate differentia upon the matter. This does not assist in attempting to define a thing's essence.

Aristotle's next argument in the above passage concerns the origin of movement. The great and the small, i.e., the indefinite dyad, is a Platonic principle for the Forms. So, if the indefinite dyad is movement, so too will the Forms be moved. However, the Forms are to be thought of as separate, eternal, perfect and unchanging. That which is perfect and unchanging doesn't move. However, if the Forms are not moved, where in Platonism is there a justifiable explanation for the origin of movement that we observe in sense-perceptible objects? Either there is a Form of motion that sense-perceptible objects participate in that explains movement in the sensible world or there isn't. If there isn't a Form of motion, then we can discover no cause of movement in the sensible world, and such a difficulty, Aristotle argues, must be answered or the pursuit of scientific knowledge in the investigation of natural philosophy must be abandoned because such a study would be destroyed by such a fundamental absence of causality pertaining to movement.

Objection No. 15: *Metaphysics*, Book Alpha, Ch. 9 992^b10-13.

Aristotle's next criticism is aimed at how the results of positing Plato's theory of Forms fail to result in any type of unity.

And what is thought to be easy-to show that all things are one-is not done; for by 'exposition' all things do not come to be one but

there comes to be a One-in-itself, if we grant all the assumptions. And not even this follows, if we do not grant that the universal is a class; and this in some cases it cannot be. (*Metaphysics*, Alpha 9, 992^b10-13.)

If the theory of Forms is true, then we will be unable to have scientific knowledge of what things are and what state they are in because without an adequate explanation of causes and a distinct set of first principles based on logic all particulars will participate in the separate Forms, and this will create a situation in which all of our fundamental assumptions concerning truth are based on something unobservable, separate, and seemingly unknowable and indefinable. If there is no scientific knowledge, and our study of nature is destroyed, then all things become one in the sense that all things are unknowable. Aristotle raises the ontological stakes one step further and argues that not only does this situation of unity not arise in our sensible world of experience when the Forms are posited, but furthermore if indeed the Platonists were correct then only a mere unity-in-itself would arise, using Kantian terminology, in the noumenal realm. However, such a unity-in-itself is unknowable by the human mind due to the necessity of separation required by the theory of Forms and the objects that it attempts to explain. Unity-in-itself does not arise, also, because when considering all sense-perceptible objects, universals cannot be considered to be a class, i.e. a genus. For Aristotle, universals, (such as identical properties or relations or similar types or kinds), must be instantiated within a particular, concrete sense-perceptible object. Universals do not exist as separate, unknowable Forms. Through our experience of observing instantiated universals in

particulars, such as the color green found in plants and leaves, we can through abstraction understand such greenness to be a universal. The universal abstracted from instances does not refer to 'all green things' but rather the quality of greenness in those particulars that they all share in common. All particulars may have certain universal properties that they share with other things, however they are not participating in the Form of unity. Furthermore, individual particulars within a given set can be counted separately, but it is not reasonable to think that there is a universal genus that applies to all sense-perceptible objects.

Objection No. 16: *Metaphysics*, Book Alpha, Ch. 9 992^b14-17.

A further difficulty that arises when positing the theory of Forms is the lack of an adequate explanation concerning the existence of geometrical extensions.

Nor can it be explained either how the lines and planes and solids that come after the numbers exist or can exist, or what meaning they have; for these can neither be Forms (for they are not numbers), nor the intermediates (for those are the objects of mathematics), nor the perishable things. This is evidently a distinct fourth class. (*Metaphysics* Alpha 9, 992^b14-17.)

The proper placement of geometrical extensions within the mathematical sciences remains as a difficulty for the Platonists. Since such geometrical extensions are not numbers, and also therefore not Forms, and they will not exist within the realm of the Forms. Geometrical extensions are also not the so-called intermediates, i.e. the objects of mathematics, nor are they the perishable things presented to us in the

sense-perceptible world. If we accept Platonism, then it will be necessary to posit a fourth class in order to properly place geometrical extensions within mathematics.

Objection No. 17: *Metaphysics*, Book Alpha, Ch. 9 992^b18-24.

The culmination of *Metaphysics* Book Alpha chapter nine starts with a warning from Aristotle. Anyone that attempts to discern the most basic parts or elements of something that is, without simultaneously being cognizant that there are many different ways in which it may be said that such a something that is exists, is doomed to failure.

In general, if we search for the elements of existing things without distinguishing the many senses in which things are said to exist, we cannot succeed, especially if the search for the elements of which things are made is conducted in this manner. For it is surely impossible to discover what acting or being acted on, or the straight, is made of, but if elements can be discovered at all, it is only the elements of substances; therefore to seek the elements of all existing things or to think one has them is incorrect. (*Metaphysics*, Book Alpha, 992^b18-24.)

This is another argument against Plato's theory of Forms, and the above passage highlights some of the main weaknesses in such a theory. First, if we endeavor to initiate an investigation into the principles of existing things, i.e. of things that are spoken of in many senses, yet fail to distinguish those many senses, then such an investigation itself will fail and no scientific knowledge will be acquired. Plato's theory of Forms does not create scientific knowledge due to inherent inadequacies. One

such inadequacy is not being aware of the many ways in which a thing may be said to be. Being, when considered in its primary sense, refers to substance. When considered in its non-primary senses, being may refer to the qualities, condition, location and quantities of substance. Aristotle criticizes Plato for not being aware of the many senses of being, and for positing principles of existing things that do not take account of those many senses. We are searching for the principles, and elements of substance, and without an adequate understanding of the subtleties of the many ways being is expressed; the resulting principles will also be inadequate.

Objection No. 18: *Metaphysics*, Book Alpha, Ch. 9 992^b24-31.

The next objection found in Book Alpha is centered on Aristotle's rejection of the Platonic theory of recollection, or *anamnesis*.

And how could we learn the elements of all things? Evidently we cannot start by knowing something before. For as he who is learning geometry, though he may know other things before, knows none of the things with which the science deals and about which he is to learn, so is it in all other cases. Therefore if there is a science of all things, (*hōste ei tis tōn pantōn estin epistēmē*) as some maintain, he who is learning this will know nothing before. (*Metaphysics*, Book Alpha, 992^b24-31.)

Based on the argument presented in objection seventeen, it can now be said that the criticism of Plato's misunderstanding of the many senses in which things are said to exist leads to Aristotle's rejection of Plato's epistemology, and in particular to the notion of innate knowledge, which is known as the theory of knowledge as recollection, or *anamnesis*. It is

the indiscernibility of the elements of things that arises out of a misunderstanding of the verb *to be*, which eventually brings Aristotle to the abandonment of both the theory of Forms and the theory of knowledge as recollection. It seems as if Aristotle in the above passage is directly answering difficulties that were raised in Plato's *Meno*, and in doing so rejects the theory of knowledge as recollection. In the dialogue, Socrates poses a mathematical puzzle to a young slave boy as a way to present anamnesis as a solution to Meno's paradox.⁶³ Meno's paradox, which basically states that it is impossible to know if the object of knowledge that one is seeking can ever be positively recognized as such an object. If we are searching for an unknown object of knowledge, how is it that one can know that is the thing being searched for, even if such a thing is suddenly encountered? Such a paradox arises in the dialogue as a result of the search for a definition of virtue. If all knowledge is innate, then through certain helpful questioning a person not familiar with a particular branch of knowledge can, through *anamnesis*, recall the fundamental principles of that science and will provide the questioner with correct answers to certain questions. Meno's slave boy is answering questions concerning geometry, and it is with this mathematical science that again Aristotle illustrates his opposite conclusions to Platonism. Drawing lines in the sand and drawing out answers of a child in the form of methodological Socratic questioning are not validations for or proofs of the existence of *anamnesis*. A child that constantly agrees to calculations such as division and multiplication as applied to a square may hold a

rudimentary understanding of arithmetic and even geometry, but in no way can that child possess innate knowledge or understanding of the first principles of the mathematical sciences. For Aristotle, this is true of knowledge pertaining to all of the sciences, not just mathematics. Knowledge is not acquired by *anamnesis* because it has been shown through experience that we gain understanding and knowledge through sciences that are based on first principles. Aristotle is showing in *Metaphysics* that a search for first principles is the duty of philosophy, and to discover universal truths that pertain to a science or other sciences is necessary in order to achieve *epistêmê*. *Anamnesis* requires separate, eternal Forms. How such innate knowledge is acquired from the Forms is never explained by Plato scientifically. If there is a universal science, a science that encompasses and explains all things, then the knowledge of that science must be accumulated through observation, study, and experience, and not through recollection. Plato's Forms do not solve Meno's paradox. Even if one has a certain amount of knowledge concerning geometry, it is not possible to know about some object of knowledge that has yet to be acquired. If *anamnesis* were true, and the Forms were the source of all knowledge, then man would be omniscient, and know all things. However, this is not the case. When we learn something, we acquire new knowledge, something that was unknown previously.

Objection No. 19: *Metaphysics*, Book Alpha, Ch. 9 992^b31-993^a1.

Aristotle offers an alternative theory of the acquisition of knowledge that isn't dependent on separate, unchanging, disconnected Forms, but is grounded in the observation of the sensible world and the first principles of logic:

Yet all learning is by means of premises which are (either all or some of them) known before, -whether the learning be by demonstration or by definitions; for the elements of the definition must be known before and be familiar; and learning by induction proceeds similarly. (*Metaphysics*, Book Alpha, 992^b31-993^a1.)

Using the simplest example of a logical argument in order to illustrate knowledge acquisition in the above passage, there must be two premises and a conclusion. Some premises refer to universals (deductive reasoning) and others to particulars (inductive reasoning). In order to arrive at the conclusion, i.e. acquire knowledge in relation to the two premises, Aristotle remarks that we must know what the premises are. If the premises are concerning universals, then it is through the universals and demonstration or definition that we acquire knowledge concerning particulars. If the premises are concerning particulars, then it is through the particulars and demonstration and definition that we acquire knowledge concerning universals.

Objection number nineteen and objection number twenty are distinguished by the content of the arguments presented within them. Objection number nineteen presents Aristotle's theory of the acquisition

of knowledge, while objection number twenty is concerned with the theory of recollection, or *anamnesis*. This juxtaposition within the presentation of objections in Book Alpha chapter nine necessitates the distinction and separation between the two objections. In objection number nineteen, a distinct argument based on the Aristotelian theory on the acquisition of knowledge is presented, while objection number twenty is centered on questioning the legitimacy of Plato's theory of recollection, or *anamnesis*. Philosophical analysis demands that distinctions are made amongst differing perspectives, and therefore these final passages found in *Metaphysics*, Book Alpha, chapter nine, are treated as separate and distinct objections to the theory of Forms. Although objection number eighteen and objection number twenty both deal with criticisms directed against *anamnesis*, they are dealt as separate objections because of what Aristotle determined to be a necessity to present an alternate theory of the acquisition of knowledge as not only an argument against *anamnesis*, but also as an argument in general against the theory of Forms. That such an Aristotelian alternative is presented in juxtaposition to *anamnesis* necessitates the structure of the objections presented herein. Objection number twenty should be read with these considerations in mind.

Objection No. 20: *Metaphysics*, Book Alpha, Ch. 9 993^a1-10.

Before finishing his criticism of Plato's theory of Forms in Book Alpha chapter nine, Aristotle poses another argument. How is it possible, if man possesses omniscient knowledge of a universal science, that he cannot be aware of such knowledge? By considering the following passage as a whole, one gains a sense of understanding that Aristotle is calling into question Plato's epistemological theory of *anamnesis*. If we possess a yet unnamed divine science and are not aware of that possession, it seems impossible that the possession of that science without awareness can lead to knowledge concerning the principles and content of that science. Moreover, if such a divine science is innate, and unknown, how is it possible for opinion to exist concerning the contents and questions that arise within a scientific context? Aristotle raises these issues within the following passage.

But again, if the science is innate, it is wonderful that we are unaware of our possession of the greatest of sciences. Again, how is one to *know* what all things are made of, and how is this to be made *evident*? This also affords a difficulty; for there might be a conflict of opinion, as there is about certain syllables; some say *za* is made out of *s* and *d* and *a*, while others say it is a distinct sound and none of those that are familiar. Further, how could we know the objects of sense without having the sense in question? Yet we should, if the elements of which all things consist, as complex sounds consist of their proper elements, are the same. (*Metaphysics*, Book Alpha, 993^a1-10.)

If we are to seriously consider or even attempt to commit to Plato's theory of knowledge as recollection, then it will become obvious that such a theory contains flaws, or gaps, that do not fully explain the acquisition of knowledge. If the acquisition of knowledge is based on *anamnesis*, and not on logical arguments that can be universally accepted as true, then we can have no demonstration, and therefore such a knowledge will show us nothing, and new understanding related to how things are constituted will never be discovered. Without certainty based on logical arguments, demonstration, and definition, scientific truths will be based on the mere opinions of men. Misunderstanding in language results from various opinions concerning the verbal pronunciation of certain parts of words. One may argue that a sound may be composed of a composite of certain other letters, while an opposing opinion could argue something completely different and completely unknown. If the Forms are the ultimate explanation for all things in the world, and knowledge is acquired through recollection, then it would be impossible to either accept or deny the many opinions men held about scientific truths. Since all knowledge is innate, demonstration and the scientific proof would mean nothing, because knowledge itself, being based on mere opinion, could not have absolute certainty. True opinions would be present, although others would be false. However, if we do indeed employ demonstration and definition along with logical argumentation, then it becomes apparent that a scientific investigation yields positive, certain results. These results can be divided into the elements that make up a thing, just as we do when

dividing the elements of a spoken sound into its constituent parts for analysis. It is actually through this scientific process of discovery that one obtains knowledge about what a thing is.

How is it possible to search for knowledge of a thing whose subject is unknown? If all knowledge is innate, what are the conditions for its understanding? Consider the imaginary animal composite goatstag that Aristotle poses in the *Posterior Analytics*. Aristotle shows us in the *Posterior Analytics* through the idea of the goatstag that understanding of universals takes place through experience of particulars. Due to the lack of evidence or observation of particular goatstags in the sensible world we are unable to conceive a universal idea concerning goatstag, and therefore have no *epistêmê* of such an animal.

Again, how will you prove what a thing is? For it is necessary for anyone who knows what a man or anything else is to know too that it is (for of that which is not, no one knows what it is-you may know what the account or the name signifies when I say goatstag, but it is impossible to know what a goatstag is). But if you are to prove what it is and that it is, how will you prove them by the same argument? For both the definition and the demonstration make one thing clear; but what a man is and that a man is are different. (*Posterior Analytics*, Book 2. Ch.7 92^b4-11.)

The above passage from *Posterior Analytics* seems to be an adequate solution to Meno's paradox. The ultimate condition for knowledge of a thing is its condition of existence. If a thing is, then it is observable, and subject to logical analysis, and is therefore able to provide knowledge of its relation to universals. Only of things that exist are we able to show demonstration and provides definitions for. We may be able to provide a

description or account of what such a goatstag's potential conditions for existence might be, or even some description of what it would resemble, however none of those descriptions would qualify as scientific certainty due to the non-observational necessity of such ideas. In other words, imagining what a thing is or attempting to account for its existence does not necessarily create *epistêmê* of a thing. The same account holds for man as well. Description alone does not equal the actual existence of a thing, for a description of what man is, and what man-in-itself is, are entirely dissimilar. One may have a potential description of a goatstag, but one does not have *epistêmê* of such an animal. Knowledge is acquired only from that which is, not from that which is not. Description is not a condition for existence; yet existence is the ultimate condition for the attainment of knowledge.

c. Aristotle's Theory of Hylomorphism in *Physics*, Book II, Ch. 2 & 3, *De Anima*, Book II, Ch. 1, *Metaphysics* Book Zeta Ch. 1, 7, 8, & 9

Now, it is necessary to search for Aristotle's solution to the various inconsistencies inherent in Plato's theory of Forms. Once a valid solution is discovered, the 5th aporia is solved, and wonder concerning this puzzle is replaced with understanding. One major piece to the solution of this puzzle is Aristotle's theory of hylomorphism, and as an introduction to this theory certain passages from the treatises *De Anima* and *Physics* will be analyzed and discussed in so far as the theory relates to the soul and

matter. Hylomorphism, a theory in which substance is analyzed as a composite of matter and form, is part of Aristotle's solution to the various difficulties that are present in Plato's theory of Forms, and also is the logical solution derived from theorizing about the various difficulties that are raised within the fifth aporia.

Aristotle provides us with an introduction to the theory of hylomorphism as it relates to matter and form in *Physics*, Book II. First, it is necessary to understand what Aristotle means by matter. In the following passage we see that matter is a relative term, determined according to the form.

Again, matter is a relative thing-for different forms there is a different matter. (*Physics*, Book II, 194^b9.)

When investigating something, and attempting to determine what a thing is, it is better to ask 'What is the matter of such and such?' instead of asking 'is such and such matter?' The matter of a thing is that which makes up a thing, i.e. its constituents.

In one way, then, that out of which a thing comes to be and which persists, is called a cause, e.g. the bronze of the statue, the silver of the bowl, and the genera of which the bronze and silver are species. (*Physics*, Book II, 194^b24-26.)

Particular things owe their existence in part to the matter of which they are made, and matter is in fact a cause of their existence.

At the outset of Book II in *De Anima*, Aristotle initiates a philosophical analysis of matter, form and substance in the search for the answer to the question concerning the nature of the soul. The search for

soul is initiated by considering the various ways in which substance is a what is, and how the concepts of potentiality and actuality are crucial for determining and recognizing those various ways. By being able to identify what is actual, and what is potential in relation to substance, Aristotle presents us with a new tool in our analytical machinery.

We say that substance is one kind of what is, and that in several senses: in the sense of matter or that which in itself is not a this, and in the sense of form or essence, which is that precisely in virtue of which a thing is called a this, and thirdly in the sense of that which is compounded of both. Now matter is potentiality, form actuality; and actuality is of two kinds, one as e.g. knowledge, the other as e.g. reflecting. (*De Anima*, Book II, 412^a6-11.)

In order to analyze and decide on exactly what substance is, it is necessary to be aware of the several senses in which substance can be considered. In the above passage Aristotle introduces three different senses in which substance can be conceived. This first sense of substance is matter; i.e. matter as potentiality. Next, substance should be considered in relation to the essence or form of a thing, and how such a form or essence in a way determines what that thing is. The form of a thing is an actuality. Finally, we should consider substance as a combination of both the underlying matter and the form or essence of a thing. This third sense of substance is a composite of potential matter and actualized form. In order to identify substances one should first consider natural living things:

Among substances are by general consent reckoned bodies and especially natural bodies; for they are the principles of all other bodies. Of natural bodies some have life in them, others not; by life we mean self-nutrition and growth and decay. It follows that

every natural body which has life in it is a substance in the sense of a composite. (*De Anima*, Book II, 412^a12-16.)

In the above passage Aristotle is concerned with showing that substances are natural living things, and that they are substances because they are a combination of matter and form. Although non-living things also may be called substances, it is the natural living things that Aristotle illustrates as being substances created from a composite of matter and form. There are living and non-living natural bodies. Rocks, mountains and lakes are non-living natural bodies and although they may indeed be substances, in the search for the answer to the question 'what is the soul?' it is only necessary to consider living things. By analyzing natural living things it becomes obvious to Aristotle that they are all substances. However, in order to define soul, it is necessary to consider potentiality and actuality and their interconnected relationship as it applies to substances. Such a consideration is initiated in the following passage:

Now given that there are bodies of such and such a kind, viz. having life, the soul cannot be a body; for the body is the subject or matter, not what is attributed to it. Hence the soul must be a substance in the sense of the form of a natural body having life potentially within it. But substance is actuality, and thus soul is the actuality of a body as above characterized. Now there are two kinds of actuality corresponding to knowledge and to reflecting. It is obvious that the soul is an actuality like knowledge; for both sleeping and waking presuppose the existence of soul, and of these waking corresponds to reflecting, sleeping to knowledge possessed but not employed, and knowledge of something is temporally prior. (*De Anima*, Book II, 412^a17-26.)

In the above passage a clear distinction between physical body and soul itself is shown, and Aristotle's conception of hylomorphism is expanded through the relationship between actuality and potentiality. The body is the matter, and thus potentiality, and the soul is a substance, which is pure actuality. Through the combination of matter and form, we arrive at a unity. This is a unity that is achieved by the organizing actuality of substance and a body which has life potentially.

That is why the soul is an actuality of the first kind of a natural body having life potentially in it. The body so described is a body which is organized. The parts of plants in spite of their extreme simplicity are organs; e.g. the leaf serves to shelter the pericarp, the pericarp to shelter the fruit, while the roots of plants are analogous to the mouth of animals, both serving for the absorption of food. If, then, we have to give a general formula applicable to all kinds of soul, we must describe it as an actuality of the first kind of a natural organized body. That is why we can dismiss as unnecessary the question whether the soul and the body are one; it is as though we were to ask whether the wax and its shape are one, or generally the matter of a thing and that of which it is the matter. Unity has many senses (as many as 'is' has), but the proper one is that of actuality. (*De Anima*, Book II, 412^a27-412^b9.)

As a human body is composed of parts and organs, so too are plants organized according to their physiology and morphology. As living organisms, plants use sunshine via the process of photosynthesis to convert the energy in sunlight into chemical energy that powers and supports growth and nutrition. While leaves serve as the solar panels for this process of photosynthesis, they also serve as water uptake organs just like roots. The stem and branches act to support the leaves and fruits, and as photosynthesis occurs, the entire plant grows accordingly. It is with these various organs that when taken together with substance

constitutes a unity, a particular plant. Like animals, plants have an actuality, a soul. It is with this organizing actuality called soul or substance that enforms matter and constitutes particular unities. The physiology and morphology of plants and animals are constituted as actualized unities by the soul, unities which deem the question of whether or not soul and body are one as unnecessary. Aristotle offers further clarification of actuality and potentiality and their relation to hylomorphism in the following passage:

We must not understand by that which is potentially capable of living what has lost the soul it had, but only what still retains it; but seeds and fruits are bodies which are potentially of that sort. Consequently, while waking is actuality in a sense corresponding to the cutting and the seeing, the soul is actuality in the sense corresponding to sight and the power in the tool; the body corresponds to what is in potentiality; as the pupil *plus* the power of sight constitutes the eye, so the soul *plus* the body constitutes the animal. (*De Anima*, Book II, 412^b25-413^a2.)

If an oak tree is destroyed by a natural disaster such as lightning or strong winds, it is not correct to say that the oak tree is potentially alive, or has the potential for life. However, the acorns that were produced as a result of the oak tree do indeed hold such a potentiality in them. We can say that a particular acorn has the potentiality to become an oak tree if certain conditions are fulfilled. Being awake is actuality in the sense of seeing or completing an action. It is a type of active status in a being through which cognition takes place or tasks are completed. The soul is actuality in a deeper sense. Soul is actuality in the sense of the power of sight through which we see, the power that drives the tool for its intended purpose, and the unifying component of our various sense organs. Soul

is actuality in the sense that when combined with a body, the result is an animal. Aristotle now raises the problem of the separability of the body and the soul.

From this it is clear that the soul is inseparable from its body, or at any rate that certain parts of it are (if it has parts)-for the actuality of some of them is the actuality of the parts themselves. Yet some may be separable because they are not the actualities of any body at all. Further, we have no light on the problem whether the soul may not be the actuality of its body in the sense in which the sailor is the actuality of the ship. (*De Anima*, Book II, 413^a4-9.)

The problem of the separability of the body and the soul, for Aristotle, is directly connected to the concepts of actuality and potentiality. Initially it seems clear that the soul and body are inseparable, for the powers of the soul are actualities of the body, i.e. they are interconnected necessities. However, since the nature of soul is not self-evident, there may be aspects, or parts of the soul that do not directly correspond to any actuality in the body. If this is so, then there is no organ or faculty present that would be able to detect, or sense, such aspects of the soul, and would be, therefore, undetectable through the available actualized senses. Another difficulty lies with a lack of understanding in terms of the soul *not* being the actuality of the body. Aristotle illustrates this difficulty by comparing the soul of the body to the sailor of a ship. A sailor is an actuality of a ship in the sense that a sailor gives power to a ship through his 1) existence on the ship and 2) fulfillment of necessary duties on a ship so that it functions properly, i.e. sails. If there is no sailor, then there is no actual work being done on a ship, and no sailing, we have only a

resting ship. Likewise if there is no soul, but there is a body with functioning senses, how can there be a functioning unity? Perhaps it would be advantageous at this point to return to the *Metaphysics* in order to conduct analyses into Aristotle's treatment of hylomorphism in his search for and analysis of *ousia* in Book Zeta.

At the outset of Book Zeta it is conjectured that in searching for substance, through an observation of the multiplicities of existing things, although there are different ways or senses in which such existing things can be said to be, it is by seeking out the most primary and simple senses of being by which a satisfactory candidate is discovered.

There are several senses in which a thing may be said to be, as we pointed out previously in our book on the various senses of words; for in one sense it means what a thing is or a 'this', and in another sense it means that a thing is of a certain quality or quantity or has some such predicate asserted of it. While 'being' has all these senses, obviously that which is primarily is the 'what', which indicates the substance of the thing. For when we say of what quality a thing is, we say that it is good or beautiful, but not that it is three cubits long or that it is a man; but when we say *what* it is, we do not say 'white' or 'hot' or 'three cubits long', but 'man' or 'God'. And all other things are said to be because they are, some of them, quantities of that which *is* in this primary sense, others qualities of it, others affections of it, and others some determination of it. And so one might raise the question whether 'to walk' and 'to be healthy' and 'to sit' signify in each case something that is, and similarly in any other case of this sort; for none of them is either self-subsistent or capable of being separated from substance, but rather, if anything, it is that which walks or is seated or is healthy that is an existent thing. Now these are seen to be more real because there is something definite which underlies them; and this is the substance or individual, which is implied in such a predicate; for 'good' or 'sitting' are not used without this. Clearly then it is in virtue of this category that each of the others *is*. Therefore that which is primarily and *is* simply (not is something) must be substance. (*Metaphysics*, Book Zeta, 1028^a10-31.)

Substance, *ousia*, is the most primary aspect of being in the sense that it is what underlies any accidents or predicates that are postulated of it. The sense in which substances are particular beings underlies all of the other ways in which such things are spoken of. When something is being spoken of as in terms of its quality, quantity, place, position, state, and so on, it is the existence of the substance itself which predicates derivations into other categories. Verbal phrases such as 'to think' or 'to be healthy' or 'to sit' do not directly or ultimately lead to discovering or saying that something exists. Such phrases only make sense ontologically when considered in conjunction with a substance, i.e., he who is thinking, he who is healthy, he who is sitting. It is when this individual is considered as simply being, without any additional categories applied to it, where substance is discovered.

One critical aspect that is necessary to consider within the theory of hylomorphism is that of generation. In Book Zeta chapters seven, eight and nine present a full treatment of the generation of things, and it is within these chapters that Aristotle proposes that substances are hylomorphic compounds, and such an explanation will render Plato's Theory of Forms as not only unfeasible and unrealistic, but also irrelevant and inapplicable to the sense-perceptible world. In Book Zeta chapter seven Aristotle delineates three possible ways in which things are said to come into existence. Those three ways of coming to be are by nature, by art, i.e. production, and by way of spontaneity. All things that come to exist do so from something, there is no such coming to be as *creatio ex*

nihilo. To say that something comes to be by nature is to say that such a thing is generated out of other naturally existing things. All natural things in the sense-perceptible world are generated from matter, and because of this, all naturally occurring substances, such as plants and animals, have the capacity to both be and not be. Furthermore, things that are generated by nature are generated by similar substances. Like comes from like, and there are no aberrations concerning this point.

In regards to things that come to be by production, or the art of craftsmanship, or the art of medicine, the form of those things come to be by a combination of the matter itself and the form existing in the soul of the producer, or the craftsman or the medical doctor. Form is defined by Aristotle as the essence and the primary substance of each thing. This point is illustrated by showing that even contraries have the same form, because the privation of something in a substance equals the opposite substance. The substance of disease is health, because it is through the privation of health by which disease occurs. Health itself resides in the soul as knowledge and as a formula. In order to create health, and to maintain health, one, such as a medical doctor, or an individual subject, must be aware of the formula and knowledge related to health and act accordingly. Health is made by following the criteria for that which is healthy. Walking is a healthy activity in that by engaging in it a body becomes healthy, or healthier. Walking creates a positive change in the matter of an individual, i.e. toxins are excreted through sweat and muscles are strengthened through such movement. In addition, drinking

something such as pure clean water is healthy for the body because it is free from disease and as such promotes health. It is in these senses by which we say that health creates health. The creation of health is, for Aristotle, a type of production or making, a type of making which is similar to the production of a dwelling. The art of medicine and the art of carpentry, are, respectively, the form of health and the form of a dwelling. These arts, when considered as they are in terms of their theoretical knowledge and formulae, have no matter, i.e. they exist as substance without matter. The production of a dwelling and a healthy body both require two things: thinking and making. Thinking is required for the knowledge and the formula, i.e. the form, and making is required for the appropriate physical application in order to arrive at the desired results, in this case those results would be a healthy person and a safe dwelling. By analyzing the above examples of health and carpentry it becomes clear that something always comes from something, and that something never comes from nothing. It also becomes apparent that a part or portion of the final result of something must exist before its production. It can also be said that the formula of a thing contains its matter, for if we have a bronze circle, we can describe it in terms of its matter, the bronze, and we can describe it according to its form, a circle.

When some things are produced out of matter, it is correct to say that they are made up of that matter, but they are not just the matter itself. A stone bridge is not stones, but is produced out of stones. In terms of health, the result of becoming healthy is a healthy man,

however, we do not say that the health comes from the man, but rather that health comes from its privation. Health is therefore the result of the privation of health, i.e. sickness. It is from the sick that the non-sick is produced, and it is therefore correct to say that one that is healthy should not be said to be non-sick, but should be said to be exactly what he is, i.e. a man, and even furthermore he is said to be a healthy man. Sickness is the privation of health, and this is a clear and common example used to show how certain things come to be. However, when cases are considered in which the privation of a thing is not clear, and in some cases the privation is even without a name, it is in the constituents of a thing from which it is produced. A set of building supplies such as bricks, windows, and wood that have been prepared for the construction of a house that as such have the privation of the structure of a house is one example Aristotle uses to illustrate this point. Once the construction of a house is completed, it is not said that the house is the materials out of which it is produced, but that it is constructed out of said materials. Therefore a brick house would not be called a set of bricks, just as a wooden house would not be just called wood, but a house made out of wood. The reason why this is so is because through the production of something comes a change, i.e. a transformation occurs not only through the materials required for something, but through the changes that occur when something comes into existence. Through the production of something change occurs with the matter, but not with the form.

Book Zeta chapter eight continues the arguments concerning generation with the fundamental idea that form itself is not what is produced. Let us consider Aristotle's example of the production of a bronze sphere to illustrate this point. In order to produce a bronze sphere, we need the matter, i.e. the bronze itself and the form of sphere. The matter and the form are combined together in order to create a bronze sphere. During this production, there was no creation of the form of sphere itself, for it already existed previously to the creation of the bronze sphere, or bronze ball. One particular sphere may be generated out of the production of a bronze sphere, but this production occurs only by chance as a by-product of the bronze sphere. The form such as a circle, or a sphere, were never produced, only something else which contains the form. The reason why the form is not produced is because if this were so an infinite regress would occur. The form of something, if produced, would have to be produced from something, i.e. another form, and that form would have to be produced from yet again another form, and this would continue on into infinity. All bronze spheres are produced from bronze, and if the form is produced in a likewise manner then an infinite set of forms would be required for the production of things. This type of form production does not occur, however, and it is clear that the form or essence of a thing is not something that is made. The form or essence of a thing comes to be in a thing through nature, art, or through spontaneity. The metalsmith creates a bronze sphere through the combination of the bronze and the imparting of the form onto the matter.

It is the particular thing that is produced, not the substance or form of that thing.

Taking the above arguments into consideration, it does not seem reasonable that there would be such things as spheres and houses existing outside of or above the particular instances of those things found in the sensible world. The form is not a definite particular thing in existence, i.e. the metalsmith forges a bronze sphere or a father produces a child out of some definite material and an immanent form. One definite particular person, such as Socrates, is in this way similar to one particular bronze sphere. They were both created out of an immanent form and some type of matter. A distinction must be drawn between particular individuals or instances of things, and things in general, such as man or animal in general or bronze sphere in general. In Plato's theory of Forms, it is the separately existing Form that explains the production of particular instances of things. Such an external Form is now unnecessary, and even counterproductive in explaining both substance and generation. Hylomorphic compounds are created out of an immanent form and matter, and this explanation of generation reasons away any need for external and separate Forms. It can be observed in relation to living things that there are many instances of particular things, and that similar things produce similar but not necessarily identical substances. Man begets man yet there is only one form, the immanent form in the substance. Any unnatural productions such as the breeding between a horse and a donkey resulting in a mule are easily explained

and offer no sound criticism and reveal no deficiencies to the theory of hylomorphism. Although it is unnatural for differing species to interbreed, in this example a mule can be explained by the genus that is shared by both the horse and the donkey, in this case, the genus *Equus*. The mule is simply explained as a combination of a horse and donkey, two separate species that share the same genus. It is clear, then from these analyses, that to have Platonic Forms acting as patterns that partake in the generation of things is not correct. By examining the generation of living things Aristotle has shown that substances do not come from external Forms. The coming to be of substances comes from other substances which are themselves composites of matter and form. In the case of human beings, different human beings or composites arise, such as Callias or Socrates, and these differences are contained in the matter, yet the form is the same. It would be unreasonable to posit separate Forms in order to explain variations within either a species or a genus. The necessary occurrence of variation inherent within a species is explained by differences in the matter, not the immanent form. Hylomorphic compounds, as such, are generated out of such a combination of matter and form. Verification of such a combination of immanent form and matter takes place *a posteriori* in the sense-perceptible world.

The initial question raised in Book Zeta chapter nine concerns the production of things through spontaneity and art. Aristotle remarks that some things, such as health, can be produced at times through art, i.e.

through the skills of the medical doctor, and at other times through spontaneity, i.e. by naturally recovering from a sickness. Other things, such as a house, can only be produced by art, and never through spontaneity. Why this is so, according to Aristotle, lies in the nature of the matter. Some matter is capable of self-initiating motion, while other matter is not. In the case of health and spontaneous healing, it is this self-initiating motion that is inherent in the matter that activates an internal movement from sickness to a state of health. It seems, therefore, that spontaneous production is reserved for living organisms that are capable of self-initiated motion. Just as the bipedal man is capable of walking, so too is he capable of spontaneous production because of his inherent ability of self-initiated motion. As walking is a natural motion for man, so too is health a natural state for him, and as a living hylomorphic organism it is in man's nature to walk and to be healthy. Therefore, we could say that all living organisms that are capable of self-initiated motion activate spontaneous production naturally because such a type of production maintains and strives for the homeostasis of a thing's natural state. Nonliving things such as stones and fire are not capable of such spontaneous production because they lack self-initiated motion. Fire is indeed capable of a type of upward motion, but it is a motion that lacks the ability to create spontaneous production. In terms of things that are created by art, their very existence depends upon the particular artisan responsible for building such things. Under certain circumstances one can indeed imagine things

coming into existence through art but without a skilled artisan, for example by someone unskilled in the production of houses building a house. Although it may not be a proper, safe house, such a production is possible because of the ability of the unskilled worker to initiate motion and change in matter, i.e. the building materials.

If all forms of production are considered, i.e. natural production, production from art, and production from spontaneity, it becomes clear that everything that is produced is produced from another individual in the following ways: 1) Natural production is rooted in the generation and reproduction of things that share the same name. Man begets man, and trees are generated from acorns that come from the same species of tree. 2) Production of art occurs when something shares a part of the same name. A house is built by a skilled carpenter that has in the soul the form of building a house. 3) Something that contains a part of what is to be produced, except in cases of production which is accidental. Heat contains a part of health because when the physician applies heat to the body in order to produce health, we say that heat is in some way the cause of health, and therefore contains a part of it. Taking these above possibilities of production into consideration, Aristotle comes to the conclusion that all production, just like deduction, is rooted in substance.

Things that are produced by nature are not so different from those produced by art. A seed will produce a tree in the same sense that a skilled carpenter will produce a house. Both the seed and the skilled carpenter possess the form potentially, and the resultant productions in a

sense also possess the same name. This isn't true for all cases, though, as the example of a mule being produced out of a donkey and horse was illustrated above. Things produced from spontaneity are characterized as arising from the self-initiating motion present in the matter.

The results of these analyses lead Aristotle to conclude that not only is form not produced in relation to substance, but also that none of the other categories such as quantity or quality are produced either. During the generation of a hylomorphic compound, such as a bronze sphere, the form and the matter pre-exist but separately. The generation of a bronze sphere brings together matter (the bronze) and form (the sphere) but in no way creates them in the process of generation. The generation of substance requires the pre-existence of another substance in actuality, while the other categories pre-exist potentially.

The theory of hylomorphism answers to several explanatory deficiencies present in Plato's theories of forms. Hylomorphism explains form as being an immanent form present in sensible substances. Sensible substances are capable of initiating motion in other things and are subject to spontaneous production, such as the movement from sickness to health, or the movement from sitting to walking, or the movement from actual being to potential non-being. Sensible substances are self-generating in the sense that like creates like, and they are subject to spontaneous movement that is directed to a species' natural mode of being. It is through spontaneity that sensible substances sometimes achieve health, and adopt a tendency to sleep at night, and to

live a balanced life. Spontaneity is a type of production aimed at achieving the natural state of a sensible substance's actuality.

Hylomorphism is Aristotle's answer to the deficiencies found in Plato's theory of Forms however it is not the final piece of the puzzle to the fifth aporia found in Book Beta. Although it may be said that the general question which arises from the fifth aporia is 'what basically is there?'⁶⁴ which leads to a criticism of Plato's theory of Forms and the various answers proposed by Aristotle a more specific yet unaddressed question remaining to be answered in the fifth aporia regards non-sensible substances. Aristotle aims to achieve knowledge concerning exactly this point, and the remainder of this chapter is dedicated to the analysis and solution to this question.

d. The Positing of the Unmoved Mover in *Metaphysics* Book Lambda, Ch. 1, 6, 7, 9, & 10

It has been delineated throughout the exposition of the fifth aporia and its solutions that Aristotle rejects Plato's Forms and the so-called intermediates of mathematics as candidates for non-sensible substances. However, such a rejection of the Forms and the intermediates does not provide a complete solution to this puzzle. By advancing the theory of hylomorphism Aristotle does indeed provide a solution to the apparent gaps and theoretical problems in Plato's theory of Forms. However, such

a solution does not completely answer all of the issues raised within the fifth aporia. It should be restated here that in the fifth aporia Aristotle is seeking a solution concerning the metaphysical question of whether or not 'sensible substances alone exist, or that there are others besides these?'⁶⁵ The theory of hylomorphism does indeed show how sensible substances come into existence and what the world is basically composed of. Although rejected throughout the *Metaphysics*, the Forms and so-called intermediates of mathematics would be considered to be non-sensible substances if they did indeed exist. Such a rejection, however, does not mean that Aristotle completely denies the existence of non-sensible substance. The answer to this part of the puzzle, and its final solution, is found in *Metaphysics* Book Lambda. In chapter one of Book Lambda Aristotle defines three different kinds of substance, and the proper sciences that study each type.

The answer to the question of whether or not non-sense-perceptible substances exist is initially explained at the beginning of *Metaphysics* Book Lambda, chapter one:

There are three kinds of substance—one that is sensible (of which one subdivision is eternal and another is perishable, and which all recognize, as comprising e.g. plants and animals), -of this we must grasp the elements, whether one or many; and another that is immovable, and this certain thinkers assert to be capable of existing apart, some dividing it into two, others combining the Forms and the objects of mathematics into one class, and others believing only in the mathematical part of this class. The former two kinds of substance are the subject of natural science (for they imply movement); but the third kind belongs to another science, if there is no principle common to it and to the other kinds. (*Metaphysics* Book Lambda, Chapter 1, 1069^a30-1069^b2.)

Substance, for Aristotle, is divided into three different kinds. The first two kinds are sensible, and therefore are studied by natural science because they move. Sensible substances are of two types because one type is perishable, i.e. it is capable of both being and not-being, and another type is eternal, i.e. capable of only being. The third kind of substance differs from the first two kinds in the sense that it is not in motion, and therefore is the subject matter of a different science. It may also be stated that this third kind of substance does not have matter. Matter changes and this change is a type of movement. If this third kind of substance is immovable and does not change, then this kind of substance may be classified as a non-sensible substance. It is in Lambda Six where Aristotle demonstrates the logical necessity of an immovable substance.

Since there were three kinds of substance, two of them natural and one unmovable, regarding the latter we must assert that it is necessary that there should be an eternal unmovable substance. For substances are the first of existing things, and if they are all destructible, all things are destructible. But it is impossible that movement should either come into being or cease to be; for it must always have existed. Nor can time come into being or cease to be; for there could not be a before and an after if time did not exist. Movement is also continuous, then, in the sense in which time is; for time is either the same thing as movement or an attribute of movement. And there is no continuous movement except movement in place, and of this only that which is circular is continuous. (*Metaphysics* Book Lambda, 1071^b3-12.)

Aristotle argues in the above passage that the necessity for an eternal unmovable substance is based on the nature of motion and time. Both motion and time are eternal, i.e. they were never generated and will

never cease to exist. Motion must be eternal because if it wasn't then the generation of sensible substances wouldn't be possible. Motion always is because without it the change, corruption, and generation of things in the sensible world would not occur. Time is also incapable of coming to be or ceasing to exist for similar reasons. All things in the world exist through time, and their changes and motions are measured through the Aristotelian notion of time. If time could cease to be, then so too could the idea of duration, and it would be impossible to assign points of temporality to movements. It would not be possible to speak of the past or the future, but only of some indeterminate present. Since movement and time are imperishable, then, there must be something that is also imperishable. This is an eternal and imperishable substance. Without such an eternal and unmoved substance, all things would be capable of destruction-including motion and time. Movement and time are not capable of destruction because if they were, not only would temporality cease to exist, but the world and all of its components would likewise cease to exist. Motion is eternal and continuous always like time is. Spatial movement is the only type of continuous motion, and it is only circular rotation that is truly continuous. Motion and time, then, are necessarily eternal, and sensible substances as a whole are potentially sempiternal, i.e. existing infinitely within an endless temporality, in the sense that throughout a temporal existence such sensible substances partake in a seemingly endless cycle of generation and corruption. The result of this cycle of generation and corruption is the continuation

indefinitely of any species of sensible substances. They are not, however, eternal, in the sense that they do not exist outside of time and are therefore not capable of not-being.

An eternal non-sensible substance that does not contain any matter must exist as a pure actuality in order to cause movement in things throughout all of time. For if such a capacity were indeed to exist in a non-sensible substance as a potentiality, then that capacity and the non-sensible substance itself would be capable of not being. Plato's Forms, though thought to be eternal, lack any capacity or principle which causes movement, and furthermore the Forms become even more problematic when considered in terms of actuality and potentiality.

Towards the end of Book Lambda, chapter six, Aristotle criticizes not only Plato, but also the natural philosophers and mythologists for failing to explain or recognize a moving cause and for misunderstanding potentiality and actuality. Some philosophers, such as Plato and Leucippus posit eternal actuality and movement yet they did not explain the cause of such movement. Any possible explanation from the natural philosophers or mythologists concerning the nature of the world and what exists fails to adequately account for the cause of movement. For those that suppose the world was generated from night, or that all things were once one, posit that being arises out of not-being, yet their explanations do not contain a causal factor for movement. For Aristotle the eternal non-sense-perceptible substance which causes the movement of all things is pure actuality, and actuality is prior to potentiality. Even if

potentiality and actuality are part of a cyclical nature that equalizes them, there must always be something actual permanently existing. Therefore, Aristotle shows us in Lambda Six that the world is eternal, yet the things existing within it are not eternal. The world is necessarily eternal because there is a non-sense-perceptible substance that is pure actuality which is necessarily eternal; for if movement and time were not imperishable then not only could we not have only a sense of the present, but furthermore we would be forced to admit that something comes from nothing and that nothing is eternal. Aristotle commences Book Lambda chapter seven by raising these concerns yet quickly dismisses them.

Since this is a possible account of the matter, and if it were not true, the world would have proceeded out of night and 'all things together' and out of non-being, these difficulties may be taken as solved. There is, then, something which is always moved with an unceasing motion, which is motion in a circle; and this is plain not in theory only but in fact. Therefore the first heavens must be eternal. There is therefore also something which moves them. And since that which is moved and moves is intermediate, there is a mover which moves without being moved, being eternal, substance, and actuality. (*Metaphysics*, Book Lambda 1072^a19-26.)

Being does not arise out of non-being, because there exist some things that are, were, and will always be. The primary heavens are eternal because they move in a constant, unending, continuous circle. They are moved by the Unmoved Mover, an eternal, non-sensible substance that exists as pure actuality without any matter. It is here, in Lambda Seven, where Aristotle draws from his conclusions of the physical world

presented in Lambda Six to introduce his theological views which provide the final solution to the fifth aporia.

The Unmoved Mover, *ou kinoumenon kinei*, is God, and it is necessary in Book Lambda chapter seven for Aristotle to explain how as an initiator of all movement, it is not itself subject to that movement. The Unmoved Mover is immune from movement because it is the object of desire and thought of all things, i.e. it is an intentional object. Even basic desires or thoughts about specific things are based on the desire or thought of the Unmoved Mover, because desires are determined by opinions, and opinions are based on thought. Therefore, it is thought itself that initiates desire because something is desired due to the fact that such a thing is thought to be good. A real world example that illustrates this point is exercise. One desires to go for an early morning walk because opinion, rooted in thought, has determined that such an activity is good. However, the opposite is not true, for it is not the case that something is thought to be good because it is desired. Desire and opinion are based on thinking. One does not think that walking in the early morning is healthy because it is desired. Within thought itself Aristotle proposes that there is a list of opposites which are the objects of thought. At the top of one side of this list is substance, substance which exists as an actuality.

Substance as actuality

non-substance

That which is good

that which is bad

The intrinsically desirable

the intrinsically non-desirable

The good and the intrinsically desirable are on the same side of the list as substance as pure actuality, i.e. the Unmoved Mover. However, it is the Unmoved Mover that is at the top of the list on one side of the opposites as objects of thought because it is the most desirable, most perfect, and most primary. It is that which is most primary that is also the best and is therefore at the top of the list. In considering the opposing side of the list of the objects of thought, the opposite may be said. That which is least primary, least desirable, and least perfect is at the top of that list.

The Unmoved Mover initiates motion by being the primary object of desire, by becoming the object of thought, and by being loved. The Unmoved Mover causes movement in the heavens. The cosmos is in motion, and because of this it is capable of change, even if its motion is in place, i.e. a static, circular rotation. Therefore even if the cosmos is eternal it is still capable of change related to motion. The Unmoved Mover, however, while it initiates spatial movement, including the most primary type of spatial movement, the circular rotation found in the cosmos, does not itself move.

The eternity of motion and time are two necessary conditions that must exist in order for the continuous cycle of generation and corruption to extend indefinitely not only into the future but also historically in the past. The Unmoved Mover is the cause of the eternity

of motion and time, and initiates motion in all things, and therefore exists necessarily and is a first principle. As a first principle and initiator of motion in the cosmos and our world, the Unmoved Mover is the creator of the world, and exists as a pure actuality in eternal goodness and pleasure of which a man's best days offer only a fleeting glimpse of such pure actuality. It is here in Book Lambda chapter seven that Aristotle posits the connection between the Unmoved Mover and *nous*. *Nous*, a faculty of the intellect found in humans, is an intuitive understanding rooted not in the sense-perceptible world but rather in thought itself. The best kind of contemplation for Aristotle is contemplation of that which is best. *Nous*, then, a faculty of thought, possesses a divine element within it because it grasps and becomes what is best and most divine. It may be said, then, that there is a faculty of the human intellect that is eternal and divine.

And thought thinks itself because it shares the nature of the object of thought; for it becomes an object of thought in coming into contact with and thinking its objects, so that thought and object of thought are the same. For that which is *capable* of receiving the object of thought, i.e. the substance, is thought. And it is *active* when it *possesses* this object. Therefore the latter rather than the former is the divine element which thought seems to contain, and the act of contemplation is what is most pleasant and best. (*Metaphysics*, Book Lambda 1072^b20-24.)

Thought itself is most fulfilling when it is directed towards the best object of thought, and in this case the object of thought and thought itself are one and the same.

The Unmoved Mover, then, i.e. God, has life, for thought actualized is life, and therefore God is an eternal, supremely good being

that is pure actuality. If contemplation of the best object of thought is also the best and most pleasant activity that humans can engage in, is this true also of the Unmoved Mover? In other words, what is the true nature of the state of God's existence? In Book Lambda chapter nine Aristotle addresses this issue. If the Unmoved Mover thinks of nothing, then that is no different from sleeping, for a content-free thought contains no object of contemplation. However, if the Unmoved Mover does indeed think, but always thinks about something outside of itself, then it is not fully perfect because the object of contemplation itself is not perfect. If the Unmoved Mover is the best substance, then it must also be the object of thought for itself, which is divine, eternal and changeless. The thought of the Unmoved Mover is directed upon itself, i.e. it cogitates self-reflexively in a state of pure thought. This state of pure thought through self-reflexive cogitation continues into eternity, like the Unmoved Mover itself, for any type of other thought would be a change, i.e. a movement, and it would be a movement from what is the best to what is worse. The Unmoved Mover is, then, in a state of pure thought thinking about itself.

The order of the universe and its relation to the Unmoved Mover are addressed in Lambda Ten. The universe is good, and such goodness is derived from the Unmoved Mover. Aristotle employs a metaphorical argument of an army to illustrate this point. An army is good because its general is good, and the army depends upon the general and his goodness more so than a general would depend upon an army. Likewise in the world all things are ordered and connected to each

other in the sense that they all share the same goal. Chance may exist but in no way does it affect the nature of the universe or its inherent goodness. Aristotle uses the metaphorical argument of household slaves to illustrate this point. The random acts of household slaves may perhaps not be fully good, however, such random acts do not erode or weaken the inherent goodness found in an ordered household. Discord may arise from chance, however chaos does not result because of the inherent order of the universe. Likewise chance may affect certain individuals within certain circumstances, however, the goodness inherent within the universe as a whole is never compromised. Today, the phrase, 'the greater good,' which is usually used when describing the inherent goodness that is present within specific societies and cultures when considered in their entirety, reflects the Aristotelian idea that the universe as a whole is indeed fundamentally good. Near the culmination of Book Lambda chapter ten Aristotle addresses the necessity of positing the fifth aporia and the relation of the content of that puzzle to the study of being *qua* being in general. Although Aristotle does not explicitly state in Book Lambda *prôtê philosophia* or the *epistêmê* of being *qua* being, theology is indeed the culmination of *prôtê philosophia* and as such it becomes clear that Book Lambda is in fact dedicated to an explication of this divine science.

Again, if besides sensible things no others exist, there will be no first principle, no order, no becoming, no heavenly bodies, but each principle will have a principle before it, as in the accounts of the mythologists and all the natural philosophers. But if the Forms or the numbers are to exist, they will be causes of nothing; or if not

that, at least not of movement. (*Metaphysics*, Book Lambda, 1075^b24-28.)

In the above passage Aristotle states the unfavorable results if non-sense-perceptible substances did not exist. Without God, the Unmoved Mover, no ultimate first principle would exist. If this were so, then there would be no order at all, and there would be no generation. Furthermore, celestial objects would not exist, and all principles will have previous principles. If such a universe could exist without non-sense-perceptible substances, it would be a universe that is governed by chaos that would exist without any chance of gaining scientific certainty concerning its nature. If we grant that the non-sense-perceptible substances that exist are indeed the Forms, they will be causally empty, especially as causes of movement.

This conclusion will summarize the results of the analyses contained within this chapter. It has been delineated in this examination and analysis of the fifth aporia that there exists a tripartite set of solutions to the fifth aporia. The first part of the solution is a critical rejection of most parts of the theory of Forms. Aristotle does this in order to clear the ground in preparation for advancing a better explanation of how things come to be. This better explanation is based on observation of the sense-perceptible world is called the theory of hylomorphism and is the second part of the solution. The third part of the solution is the affirmation of the existence of a non-sensible substance, i.e. the Unmoved Mover, which accounts for the necessity of an eternal non-sensible substance. This necessity exists because it is likewise

necessary that motion, and its attribute, time, be eternal, i.e. incapable of non-being, for not only the world to be experienced and understood temporally, but to exist at all. This affirmation of the existence of non-sensible substance avoids the paradoxical contradictions found in a critical examination of Plato's Forms due to Aristotle's account of the theory of hylomorphism and his results of generation and corruption when considered in relation to the inherent causality found within the connection between sensible substances, *nous*, and the Unmoved Mover. The positing of the Unmoved Mover also provides an account of causality that is lacking in Plato's theory of Forms. Therefore, as a solution to the fifth aporia, it can be reasonably answered, that yes, in addition to sensible substances there are other types of substances that exist. Sensible substances come into existence as explained by hylomorphism. Aristotle categorizes three types of substance. There are sensible substances that are perishable and imperishable, and there is a non-sensible substance. Perishable sensible substances are things found in this world such as living organisms. Eternal sensible substances are the heavenly bodies of the cosmos. The eternal non-sensible substance is the Unmoved Mover. *Nous* is identified as that part of the intellect that is eternal and non-sensible. All parts of the solution to this puzzle are found throughout the *Metaphysics*, and other treatises also within the Aristotelian corpus. Although throughout the presentation of this aporia Aristotle mainly criticizes Plato's theory of Forms as an example of an insufficient theory of non-sensible substance along with

the notion of the intermediates of mathematics, he does not actually reject the notion itself of the existence of an eternal non-sensible substance. As was stated in the introduction to this paper, an aporia offers two possibilities of thought of which both seem to be reasonably possible, but only one is correct. One side of this puzzle is asserting that sensible substances alone exist. This was found to be not possible due to the necessity of the eternality of motion and time. The other side of this puzzle is asserting that non-sensible substances exist. If we accept Plato's solution, we are left with innumerable paradoxes that contradict reality. Even considered mathematically, Plato's theory of Forms is contradictory. Aristotle solves this aporia by affirming positively, yes, there are other types of substances besides just sensible substances while simultaneously rejecting Plato's theory of Forms and that the intermediates of mathematics exist. Besides the two types of sensible substances there exist non-sensible substances. The analysis and exposition of the fifth aporia, therefore concludes, and Aristotle again firmly asserts within the tripartite structure of the solution to this puzzle, as he does throughout the *Metaphysics* that the study of being *qua* being is grounded in first principles.

Part Four: Conclusions of the Present Study

Chapter Seven

I. Results of the Present Investigation

It is in *Metaphysics* Book Beta where a sense of clarity arises concerning the pathway in which Aristotle approaches on building a science of being *qua* being. In order to construct a science, a set of first principles is necessary in order to avoid contradictions and non-scientific answers. In this conclusion the results of the present study will be re-presented as a whole in order to show evidentiary support for the claim that the *Metaphysics* comprises a philosophical unity.

As was shown in the presentation of the first aporia, philosophical thinking is initiated from the puzzle and the puzzlement that arises when considering whether or not it is one single science or many sciences that study the causes.⁶⁶ Both choices are seemingly plausible, however, Aristotle solves this puzzle by affirming that it is within the study of one single science to study the causes. This is the first of the four puzzles which are concerned with the possibility of there existing a science of the study of being *qua* being. The first aporia is solved in *Metaphysics*, Book Gamma, chapter one, and Book Epsilon, chapters one and two. In *Metaphysics*, Book Gamma, Aristotle states the science that investigates all the kinds of causes is in fact the same science that investigates being

qua being. This is so because the science that investigates being *qua* being does so in a general way, as opposed to the particular sciences, which only study certain attributes of being, even if that study is causally motivated. The particular sciences are unqualified to investigate the causes themselves because the range or perspective of their inquiry is too limited. First philosophy approaches the study of being in the most general way, and therefore it is also qualified to inquire into the nature of all the kinds of causes in the most general way. In *Metaphysics* Book Epsilon chapter one Aristotle develops further the idea of first philosophy being the most general study of being and that first philosophy is the one proper science that investigates all of the kinds of causes because only first philosophy addresses the nature of and issues connected to being in virtue of its own nature. The particular sciences also pursue the truth scientifically, but such investigations do not yield general results concerning the nature of being or of all of the kinds of causes because of the specialized nature of what they study. In *Metaphysics*, Book Epsilon, chapter two, Aristotle analyzes the three theoretical sciences, natural science, mathematics, and theology, and concludes that theology is the proper science for an investigation into all of the kinds of causes due to the universality of its subject matter and the fully encompassing nature of the science itself. Therefore, Aristotle solves this aporia by stating in *Metaphysics* Book Gamma and Book Epsilon that it is the duty of only one science, a theoretical science, which is theology, i.e. *prôtê philosophia*, to study all the kinds of causes. *Prôtê philosophia* contains a

dual characterization in the sense that it is both the *epistêmê* of being *qua* being and theology. Defining *prôtê philosophia* by this dual characterization is rooted in a comprehension of the *pros hen* structure and the two stages view.

With the solution to the first aporia firmly grounded in truth and made explicit in the opening chapters of Book Gamma and Book Epsilon, Aristotle broadens his inquiry into *prôtê philosophia*. In the second aporia he asks whether or not it is the task or duty of *prôtê philosophia* to investigate, in addition to all of the kinds of causes and being *qua* being, (as was established in the solution to the first aporia) to also investigate the starting-points of demonstration, i.e. the principles of demonstration. Both logic and metaphysics are both fundamental sciences and it is necessary to ascertain if the principles of logic belong to the study of metaphysics, and furthermore, which study is more prior. The axioms of logic are the most universal and are the first principles of not only all of the particular sciences but also of all things, so it is necessary for Aristotle to confront this aporia and propose a solution.

Aristotle solves the second aporia in *Metaphysics*, Book Gamma. It is here, in Book Gamma, where Aristotle elucidates on his ideas concerning the connection between the principles of demonstration and the science that investigates substance. The principles of demonstration do not address any particular being; instead they address everything that is, including the subject matter of all of the particular sciences. Likewise, *prôtê philosophia* does not explicitly address any issues with any

particular being, but being as a whole, in the most universal and general sense. Philosophy is concerned with truth and falsity itself, and therefore the principles of demonstration are tools that the philosopher uses in order to carry out rational investigations that determine what is universally true, and likewise universally false. Since philosophy is the most general and universal science that investigates not only truth and falsity in relation to particular things, but truth and falsity itself, and how such conditions apply to all things, it can be said that it is the responsibility of the philosopher to investigate the principles of demonstration, being *qua* being, and various theological issues in the most general way. Since such philosophical investigations are conducted with the explicit understanding that all results aim at achieving a truth that is universal in nature, it is necessary to determine which logical first principles are the most fundamental and most substantial. In *Metaphysics* Book Gamma, chapter three Aristotle writes that such a principle does indeed exist, and that it is the principle of non-contradiction. The principle of non-contradiction (PNC) is the most fundamental of the first principles of logic because without its truth initially established as fact, the world and the things within it would not be distinguishable or subject to discussion through language, but also such things would not be discernible in everyday life. The PNC, according to Aristotle, states several fundamental facts about how things are and their general conditions of existence in this world. In *Metaphysics* Book Gamma, chapters three and four, Aristotle presents four universal truths

that apply to the PNC. First, Aristotle states that the PNC applies to subjects and their attributes, and that the same attribute cannot, in relation to one subject, both belong and not belong to it at the same time. Secondly, this condition also applies to the same subject in terms of contrary attributes, likewise when considered at the same time. The third universal truth applies not to the attributes of subjects, but just to the subjects themselves, and raises the condition of existence in the sense that Aristotle states that it is not possible for something to both exist and not exist at the same time. This third universal truth therefore also shows that the PNC is also an ontological principle since it explains a necessary condition of existence. The fourth universal truth concerns the statements of such subjects. The first three universal truths of the PNC are necessary conditions of all things in the world, therefore, it is not true and that to say that something both exists and doesn't exist at the same time. In *Metaphysics*, Book Gamma, chapter four Aristotle engages in a barrage of arguments against those that attempt to refute the truth of the PNC. Some critics of the PNC may demand a demonstration of it, however, Aristotle states that such a demonstration is impossible because an infinite regress would occur due to the assumption of a more fundamental and prior logical principle which doesn't exist. The PNC is provable, however, by an elenctic refutation, or negative demonstration. Such a negative demonstration is carried out by the listener, or opponent, not the defender of the PNC, because it is through the opponent's speech that the defender of the PNC recognizes something eventually he says

that is not contradictory. Aristotle dedicates *Metaphysics*, Book Gamma, chapter four to defending the PNC against those that deny it and make contradictory statements concerning the nature of truth and the universe.

Aristotle's defense of the PNC continues in *Metaphysics*, Book Gamma, chapter five. It is in chapter five where we find the arguments against a certain type of relativists, here called the Group A relativists. These types of relativists, in particular the philosophers Protagoras, Anaxagoras, Democritus, Empedocles and Parmenides, due to difficulties in their thinking, unknowingly and unintentionally commit a logical fallacy by conflating opposite views due to observations of contradictions and contraries in the world. Logical fallacies result from observing instances of contradictions and contraries that may be observed over different periods of time and mistakenly universalizing such observations to be necessary conditions of the universe. It is through the persuasion of logical arguments, whose foundation is the PNC, by which Aristotle says one must confront the Group A relativists.

In *Metaphysics* Book Gamma, chapter six Aristotle confronts the Group B relativists. These kinds of relativists need to be compelled to believe in the fundamental truth of the PNC because they are arguing for argument's sake. The Group B relativists demand a demonstration of the PNC, and it is through such an impossible demand that Aristotle shows their inherent weakness and absurdity. It is due to such inherent absurdities of the Group B relativists that Aristotle does not find it necessary to proceed with any logical arguments against them. Aristotle,

does, however, say that we should employ negative demonstration, or elenctic refutation, in order to expose their various contradictions. By destroying relativism, and by showing that the PNC is the most fundamental of the principles of demonstration, and in addition is actually also an ontological first principle, Aristotle proves in *Metaphysics* Book Gamma that it is indeed the task of one science to investigate the principles of demonstration and the first principles of being. Such a science is *prôtê philosophia*, and with the above proofs concerning this science established as true, Aristotle solves the second aporia.

The third aporia as presented in *Metaphysics* Book Beta in some ways resembles the second aporia in the general scope of its question, however the contents of the puzzle are completely different. Aristotle must determine whether there is just one science that investigates all substances. This puzzle must be solved because it is necessary to clearly comprehend what the proper contents of an investigation are of first philosophy. Aristotle solves this aporia in *Metaphysics*, Book Gamma, chapters two and three. Since there are many senses in which a thing may be said to be, Aristotle creates a classification of interconnected subjects that fall within the rubric of one discipline. In this way, a multiplicity of sciences that deal with the same subject is avoided. Within medical science, for example, due to the permutations that exist in relation to what is healthy, one finds the study of the various departments of such a science to be distinct, yet related fields. Health is the goal which unites and underlies those distinct fields within medical science.

Nutrition studies health as it is related to diet and anatomy studies health as it is related to the structure of the human body in general. Likewise, there exist various permutations in relation to substance and the study of being because of the many ways in which a thing may be said to be, therefore since *prôtê philosophia* studies being *qua* being, it will have distinct, yet related fields that study the various species within that science. All of the distinct fields within philosophy are united by their relation to one similar thing: they investigate the various species of being *qua* being, and are therefore properly called the various branches of study within the entire discipline of philosophy. In *Metaphysics* Book Gamma, chapter three, Aristotle further clarifies his position on the proper subject matter and the priority of *prôtê philosophia*. It is through an investigation into substance where one discovers what the first principles and causes are of first philosophy. Although the particular sciences conduct research in accordance with the first principles, in no way do they investigate those actual first principles. It is the duty of only the philosopher, therefore, and not the scientists of the particular sciences, to investigate being *qua* being and the various branches within philosophy that study the numerous ways in which nature, thought and action are considered *qua* being. Therefore, the third aporia is solved by answering yes, there is one science that studies all substances, and that science is *prôtê philosophia*. First philosophy is unitary and universal in the scope of its inquiry, for it studies being *qua* being as it relates to all substances. There are distinct branches within philosophy because of the various

senses in which being is said to be. *Prôtê philosophia* is a singular, unitary science, however within it and within the general study of philosophy itself, branches are found which investigate the aggregate of all substances.

The fourth aporia to appear in *Metaphysics*, Book Beta is the final puzzle that deals with the possibility of there being a science of being *qua* being. Although it seems to be clear that such a science does indeed exist from the solutions to the first three aporias, Aristotle includes this puzzle due to the necessity of the content of the puzzle. The fourth aporia raises the question of the proper subject of first philosophy. Should the science which is called *prôtê philosophia* study only substance, or in addition to that should it also study the essential attributes of substance? Although this is an important puzzle, Aristotle solves it relatively quickly compared to the other aporias that appear in this thesis. Aristotle's solution appears in *Metaphysics*, Book Gamma, chapter two. Since the study of being *qua* being studies being in the most general sense, it makes sense logically to include the studies of the essential attributes and essential properties of substance into the science called *prôtê philosophia*. Since the philosopher investigates being in the most general way, so too then must he investigate the essential attributes and properties of substance. With this puzzle solved, it can be concluded through this investigation so far that Aristotle affirms that a science called first philosophy does indeed exist. The remainder of the thesis is

dedicated to finding an original solution within the various treatises of Aristotle to the various problems that are contained within the fifth aporia.

The fifth aporia is a puzzle concerning a fundamental question within metaphysics, and Aristotle shows that this puzzle is of paramount concern within the study of first philosophy by placing it as the first puzzle to confront a difficulty within metaphysics. With the first four puzzles solved, and by declaring that there is indeed a science called *prôtê philosophia*, Aristotle immediately launches an investigation into one of the most fundamental questions within the study of metaphysics. Not only are the various solutions quite lengthy, but the presentation of the aporia in *Metaphysics*, Book Beta, is quite lengthy also. Although the presentation of the first aporia as presented in *Metaphysics*, Book Beta is quite long, (forty-four Bekker lines⁶⁷ in the original Greek text) possibly due to the fundamental nature of and importance that Aristotle regards its contents, the fifth aporia's presentation seems to make the second, third and fourth aporias appear quite short. The second aporia's presentation in Book Beta contains only twenty-six lines, the third aporia contains only eleven lines, and the fourth aporia discussed in this thesis is the shortest for it contains only ten Bekker lines of text. By comparison, the fifth aporia contains fifty-six Bekker lines of text. Perhaps it can be stated that Aristotle dedicated such a large of amount of writing to the initial presentation of this aporia in Book Beta because of the weight and depth of the issues that arise when considering this puzzle. It also may be stated that perhaps such a fundamental puzzle's exposition in Book Beta

is so long due to the fact that it acts as not only a puzzle but as a general test for Aristotle's metaphysical doctrine. Likewise, a large portion of this dissertation is dedicated to the exposition of, and discovery of solutions to, the fifth aporia.

The fifth aporia inquires into whether only sense-perceptible things exist, or, in addition to these, whether non-sense-perceptible things also exist. There are several aspects to this puzzle, and Aristotle raises an initial aspect in the presentation of the aporia; the theory of Forms that was proposed and defended by his teacher, Plato. It could be said that if Aristotle didn't have any issues with the positing of the Forms, then this aporia perhaps would not have been included in Book Beta. For the fifteen puzzles that are presented in Book Beta are fundamental puzzles, however, they are not an exhaustive list or presentation of all of the puzzles within first philosophy. However, throughout the *Metaphysics* and other works in his corpus, Aristotle does indeed take Plato to task for the apparent deficiencies that he finds with his mentor's philosophy.⁶⁸ The fifth aporia makes explicit the issues Aristotle has with Plato's theory of Forms, and in order to solve this puzzle Aristotle must first do away with those Forms. Aristotle demonstrates the weight and importance that he holds regarding this aporia by placing it as the first out of ten of the aporias that confront initial and fundamental puzzles within the study of metaphysics. Through research in the *Metaphysics*, *Physics*, and *De Anima*, this thesis has proposed an original three-part set of solutions that Aristotle advances in order to solve this puzzle. This tripartite set of

solutions is: 1) Criticize Plato's theory of Forms to the point where there can be no possible doubt as to the various deficiencies inherent in such a theory. Such a comprehensive criticism opens the way for a new theory that takes account of the sensible world. 2) Posit the theory of hylomorphism as a logical solution that also provides an account of causality. 3) Explicitly answer the fifth aporia by affirming that non-sense-perceptible substances do indeed exist, however not in the Platonic sense, but in an Aristotelian sense. This third part of the solution is found in *Metaphysics*, Book Lambda.

Aristotle's main critique of Plato's theory of Forms involves the disconnection and apparent lack of causality that exist between the things in our sensible world, and the unchanging, eternal realm of the Forms. In *Metaphysics*, Book Zeta, chapter sixteen, Aristotle concedes partial agreement for the positing of the Forms, however, Plato is criticized for universalizing one Form for all instantiations of it in the sense-perceptible world. Such a universalization of the Forms leads to an insurmountable problem for Aristotle; and this is the problem of the one over many. There can be no evidence found to logically support this theory when one Form supposedly provides causation for every instantiation of it in the sense-perceptible world. Further criticism is mounted again Plato for failing to elucidate what exactly the Forms are, and how substances are causally linked to them. Another issue that arises with the positing of the Forms and the supposed intermediates of mathematics is the infinite regress that occurs between the things and

the Forms. The intermediates would exist between the sense-perceptible things and the Forms, and in some way they would resemble both of them. An infinite regress would occur not only in mathematics, but with all things in the sensible world. Such an infinite regress would render the acquisition of *epistêmê* to be impossible. Much of Aristotle's criticism of Plato and the Forms is found in *Metaphysics*, Book Alpha, chapters six and nine. Although Plato aims at achieving a metaphysical system that accounts for an absolute, universal knowledge, Aristotle proves through his criticisms that since there is no connection between the Forms and the things in this world, absolute knowledge is not achieved due to the lack of causality apparent in Plato's system. Plato thinks that the Forms participate in the things found in the sensible world, however, Aristotle wonders exactly what Plato means by participation, for no adequate examples or definitions are proposed in any of Plato's corpus that satisfies the logical mind of Aristotle that is grounded in the world of sense-perception. In *Metaphysics* Book Alpha chapter nine Aristotle continues his barrage of arguments and criticisms against the Platonic theory of Forms by stating that Plato unnecessarily doubles things in order to explain them. Not only does the theory of Forms result in absurd explanations of the world, including an infinite regress, they furthermore contribute no *epistêmê* concerning things in the sense-perceptible world. Such an unscientific explanation seems to resemble poetry more than science for Aristotle. Since Aristotle is also seeking absolute knowledge of all things in the world, he correctly argues against Plato by employing

mathematical arguments. Mathematics and logic are true in the absolute sense in that they are true for everything, in every instance. Mathematics and logic provide us with true knowledge, and if the Forms do not make sense logically and mathematically, then we can rightly agree that the Forms do not provide us with absolute knowledge. In particular, forms and patterns in nature can be expressed mathematically, and if Plato's Forms contradict such mathematical expressions, then it must be said that the Forms do not provide us with *epistêmê* concerning things found in the world. Aristotle more than adequately demonstrates in *Metaphysics* Book Alpha chapters six and nine that Plato's theory of Forms contains insurmountable internal deficiencies that lead to contradictory, confusing, and absurd results concerning explanations of things in this world. Such explanations resemble poetry more than they resemble science, and therefore do not provide us with *epistêmê*. The first part of the solution to the fifth aporia, then, is complete, and it is in the second part of the solution, where Aristotle addresses the inconsistencies of Plato's theory and proposes instead his theory of hylomorphism.

The theory of hylomorphism is a theory proposed by Aristotle that analyzes substance as a composite of matter and form. This thesis analyzed sections from the *Physics*, *De Anima*, and the *Metaphysics* in order to provide an all-encompassing presentation of that theory. The reason why the theory of hylomorphism is presented as the second part to the tripartite structure to the fifth aporia is because this puzzle raises

the question of what basically exists in the world. Before launching into an analysis of Aristotle's ideas concerning non-sense-perceptible substances, it is necessary to provide a general account for things in the sense-perceptible world, and that is precisely what the theory of hylomorphism does. In *De Anima* Aristotle introduces three different ways in which substance must be considered. The first way is to consider substance as matter, i.e. matter as potentiality. Secondly, a substance should be considered in terms of its essence or form, i.e. its actuality. Thirdly, substance should be considered as a combination of the first and second senses, i.e. as a composite of both potential matter and actualized form. Aristotle is searching for a definition of soul in *De Anima*, and he investigates substance there in relation to natural living things. Soul is the actuality of a person, and the physical body is the potential matter. Together, they join to form a composite unity called human being. It is from this duality of matter and form, of potentiality and actuality, that a unity is formed. In *Metaphysics* Book Zeta Aristotle continues his analysis of hylomorphic composition as it is related to substance. A substantial part of *Metaphysics* Book Zeta chapters seven, eight and nine are dedicated to an exposition of the generation of things, and it is this generation that lends evidentiary support for the theory of hylomorphism. In chapter seven Aristotle delineates three possible ways in which things are said to come into existence. Those three ways are: 1) coming to be by nature, 2) coming to be by art, i.e. production, and 3) coming to be by way of spontaneity. All three ways show that everything

that comes to be does so from something else, and that there is no such thing as *creatio ex nihilo*. Furthermore, it should be stated that all things come to be from things that have matter, and that things that come to be by nature are similar to those things that produced it. Things that come to be by art or production do so by the combination of the matter out of which said thing is produced and from the form existing in the soul of the craftsman or doctor. When things come to be, such as the health of a man, or a bridge of stones, it is not correct to think that such things are generated only from the matter. A bridge is not just stones, but it is produced out of stones. Likewise, becoming healthy does not just necessarily come from the man, but health arises out of its privation, i.e. sickness. In the production of a stone bridge there is a transformation that takes place in the stones. We would not call a stone bridge a set of stones over a river, because that definition would not refer to its essence. Through the production of something there is a change that occurs with the matter from what it is made from, however the form resides originally in the soul of the stonemason, and this does not change. Furthermore, form is never actually produced. Aristotle raises this point in *Metaphysics* Book Zeta, chapter eight with his example of the bronze sphere. Matter and form are combined through hylomorphic composition to create a bronze sphere. However, the form for sphere was never actually produced in this process. If this were so, an infinite regress would occur because for every bronze sphere another form would be necessary. The metalsmith creates a bronze sphere by the bronze itself, and by

possessing the form of sphere in his soul, and it is through the imparting of the form onto the matter by which a bronze sphere is produced. It is now clear that a form is not some definite particular thing in existence, for the metalsmith forges the bronze sphere or a father and mother produce a child out of some definite material and an immanent form. Hylomorphic compounds are created out of an immanent form and matter, and in terms of natural generation like creates like in the sense that individuals produce similar, yet not identical, individuals. Aristotle's theory of hylomorphism explains away the Platonic Forms with an account of generation based on observation of the sense-perceptible world, whether that generation takes place by nature, by production, or by spontaneity. It is through Aristotle's analysis of substance in *Metaphysics* Book Zeta that he posits that all generation is rooted in substance. The theory of hylomorphism renders the Platonic Forms obsolete due to Aristotle's attention to the central role of causality in the production of things that is based in substance. Such a causality can be verified *a posteriori* in the sense-perceptible world by observing that substances create other substances through a combination of immanent form and matter.

The third and the final solution to the fifth aporia is found in *Metaphysics*, Book Lambda, where Aristotle posits the Unmoved Mover. The first two parts of the solution were necessary in order to clear the way for the final part. The fifth aporia raises the question which leads to puzzlement concerning whether only sense-perceptible things exist, or, in addition to these, whether non-sense-perceptible things also exist. The

first part of the solution involves a criticism and abandonment of most aspects of the Platonic Forms due to their separateness and inherent lack of causality with things in the sense-perceptible world. The second part of the solution is Aristotle's positing of the theory of hylomorphism in order to explain how things in the sense-perceptible world come into being while also providing an account of causality. These first two parts of the solution prepare Aristotle for the third part of the solution in the sense that they resolve several issues concerning the Forms, generation, and causality. The third part of the solution, then, is a direct answer that resolves the puzzlement found in the fifth aporia. Although it is now clear that Aristotle rejects the Platonic Forms and the intermediates of mathematics, he does indeed think that non-sense-perceptible substances exist. In *Metaphysics* Book Lambda chapter one, Aristotle proposes that there are three types of substance. Two kinds of substance are sensible. They are studied by natural science because they are in motion. One type is sensible and perishable, while another type is sensible and eternal, i.e. it is not capable of not-being. Sensible substances that are perishable are things found in our world, such as trees and animals. Eternal sensible substances are the planetary bodies that exist in the cosmos. The third type of substance is non-sense-perceptible because it has no motion and exists without matter. In *Metaphysics* Book Lambda chapter six Aristotle proposes that there exists a logical necessity for a substance that is immovable and without matter. Such a logical necessity rests on the notion that motion itself

must be eternal, and if all substances are in fact perishable, then motion itself is also imperishable. Such a result would mean that time wouldn't exist because time itself is a derivative of motion. Without motion, there would also be no change, corruption, or generation in the sensible world. Without temporality, the idea of duration would also not exist, and it would not be possible to discuss or refer to things temporally, i.e. there would be no past, present, nor future, and it would not be possible to measure motion through time. Furthermore, if motion and time were not eternal, then the world and all of its components would cease to exist. There must, be, therefore, something that exists that is eternal, non-sensible, and exists without matter. In *Metaphysics*, Book Lambda, chapter seven, Aristotle proposes that this substance is the Unmoved Mover, *ou kinoumenon kinei*. The Unmoved Mover is God, is pure actuality, and is the initiator of all movement, yet it is not subject to that movement. The Unmoved Mover is the object of desire and thought for all things. Thought itself initiates desire because thought generates opinions and it is opinion which dictates a decision concerning what is to be desired. Motion is created by the Unmoved Mover because it is the primary object of desire, and it is the object of thought, and it is loved. This is true also for the planetary bodies found in the cosmos. The cosmos is eternal, yet the planetary bodies move in a continuous, circular motion, and is therefore capable of change as it relates to motion. The Unmoved Mover is the initiator of all spatial movement, including the perpetual rotation found amongst the heavenly bodies, yet it does not move itself. The

eternality of motion, and its attribute, time, is caused by the Unmoved Mover, and it initiates motion in all things, and is therefore a first principle. As the initiator of motion and cause for the eternality of motion and time, the Unmoved Mover, is, then, a first principle and creator of the world, and exists as pure actuality. In *Metaphysics* Book Lambda chapter seven Aristotle posits the direct connection between the Unmoved Mover and *nous*, a faculty of the intellect that is a type of intuitive understanding based not on the sense-perceptible world, but on thought itself. Contemplation is the best type of thinking, and contemplation based on thinking about what is the best is the best type of contemplation. By thinking about what is best and most divine, *nous* grasps the Unmoved Mover and it too becomes what is best and most divine. Therefore, there is a faculty of the human intellect that is eternal and divine. By directing *nous* to contemplate what is best and most divine, the object of thought and thought itself become one and the same. In *Metaphysics*, Book Lambda, chapter nine, Aristotle posits the true nature of the existence of God, i.e. the Unmoved Mover. Since contemplation of what is best is the best type of thinking for humans, the same may also be said of the Unmoved Mover. Determining what is the object of thought, however, for the Unmoved Mover, requires understanding of what affect the object of thought would have on the Unmoved Mover. If the Unmoved Mover thinks about things that change, and are not perfect, then that thinking would also involve a change from what is perfect, to what is less than perfect. Since the Unmoved Mover is perfect, it cannot think about things

that change or that have not achieved perfection.⁶⁹ The Unmoved Mover is the best substance, and it is the object of thought for itself, for it is the best, most divine and eternal. The contemplation of the Unmoved Mover is directed upon itself, for it cogitates self-reflectively in a state of pure thought. Therefore, the Unmoved Mover thinks about itself thinking. The order of the universe and its relation to the Unmoved Mover are posited in *Metaphysics*, Book Lambda, chapter ten. The Unmoved Mover is inherently good, and so too is the universe. Even though chance or randomness exist that may allow for times when bad things happen, in no way do such occurrences compromise the inherent goodness in the universe. Discord also may arise from chance also, however chaos does not result because of the inherent goodness and order in the universe.

Throughout the presentation of the tripartite set of solutions to the fifth aporia, Aristotle affirms that indeed non-sensible substances exist. Initially, the Platonic Forms are rejected because of their separateness and lack of causality with things in the sense-perceptible world. Secondly, Aristotle's theory of hylomorphism addresses the apparent deficiencies of the theory of Forms and posits that substance is analyzed as a composite of form and matter. Such a theory makes Plato's theory of Forms unnecessary. Thirdly, Aristotle posits the Unmoved Mover as the most perfect substance in the universe, that is eternal, changeless, inherently good, without matter, and is the object of desire and love for all things and therefore causes all movement in the universe. By accounting for causation of the things in this world, the Unmoved Mover is a first

principle and creator of the world. *Nous* is the faculty of understanding in the intellect that contemplates that what is best and most divine, and is therefore too a divine and eternal element in man.

By examining the fifth aporia with an analysis of the puzzle by the tripartite set of solutions, it has been shown that Aristotle holds a priority of this puzzle over the remaining aporias that are listed in *Metaphysics*, Book Beta. Aristotle resolves fundamental issues that he has with Plato's metaphysics, and it is necessary for him to resolve fundamental issues such as the lack of causality in the theory of Forms and all of their inherent deficiencies, in order to prepare the way for the remaining puzzles. Within the tripartite set of solutions Aristotle does the following:

- 1.) He dismisses Plato's theory of Forms
- 2.) He dismisses the intermediates of mathematics
- 3.) He accounts for substance as a hylomorphic compound of immanent form and matter.
- 4.) He posits the most divine substance, a non-sensible, without matter, and eternal Unmoved Mover, as God, and it is a first principle, for it causes movement in all things, and is the cause for the eternality of motion.
- 5.) He posits that *nous*, a faculty of the intellect, is divine and eternal because it is what contemplates the Unmoved Mover.

With these arguments and solutions that were raised throughout the exposition of the fifth aporia, Aristotle is engaging in researching *prôtê philosophia* in relation to its most fundamental aspects, and in doing so prepares for further metaphysical research into the remaining puzzles found in *Metaphysics* Book Beta by delineating certain truths that become clear once that puzzle is solved. It certainly is the case, then, that non-sense substances do indeed exist, however, they are not the Platonic Forms nor are they the so-called intermediates of mathematics. The fifth aporia, then, fits into the first four aporias because of its preliminary nature and preparatory nature. The first four aporias were concerned with determining if such a science called *prôtê philosophia* was even possible. An analysis of those aporias proved that indeed such a science exists, and that it studies being *qua* being, the first principles, and theology. The fifth aporia continues by initiating a quest to solve a fundamental puzzle within metaphysics, and this fundamental puzzle addresses the very foundations of *prôtê philosophia*. Taken as a whole, the solutions to the first five aporias demonstrate several fundamental points concerning metaphysics. In summary, from the solutions to the first four aporias it has been determined that there is indeed a single science that investigates all the kinds of causes, and it is called *prôtê philosophia* and by analyzing the contents of *prôtê philosophia* it is clear that it contains both the *epistêmê* of being *qua* being and theology. In summarizing the fifth aporia, it may be said that indeed non-sense-perceptible substances exist. Theology studies non-sense-perceptible

substance, i.e. the Unmoved Mover. There is also a divine element in humans, and this is the faculty of the intellect called *nous*. Taken and considered as a preliminary group, the first five aporias, after they are considered in conjunction with the solutions presented in this thesis serve as an introduction to *prôtê philosophia* and as a foundational introduction that is preliminary to the remaining aporias found in *Metaphysics*, Book Beta. It also becomes clear, by considering the evidentiary support discovered through an analysis and exposition of the first five aporias, that the *Metaphysics* is indeed a philosophical unity. The *Metaphysics* is concerned with solving the aporias presented in Book Beta, and is likewise dedicated to analyses that require accepting as truth certain foundations in *prôtê philosophia* that are discovered through research of, and in the solutions to, the aporias. One such foundational certainty is the necessity of being aware that the correct way in which we ought to speak is in conjunction with the principle of non-contradiction. This certainty becomes clear through a *logikos* analysis of being.⁷⁰

Throughout this thesis evidentiary support has been presented that defends a unitary reading of the *Metaphysics* based on an exposition of the first five aporias to appear in Book Beta. This evidentiary support, which in general are the aporias and the solutions to the aporias found in Book Beta, does in fact uphold the claim that the *Metaphysics* is a philosophical unity because it is shown throughout said evidentiary support that Aristotle has a pre-determined set of puzzles that need to be resolved and a pre-determined subject of inquiry for the treatise.

Furthermore, it is clear from the solutions to the aporias analyzed in this thesis that Aristotle has fully developed ideas concerning substance, the science of being *qua* being and his doctrine in relation to *prôtê philosophia*. Even though the *Metaphysics* may have been written over a period of years, it is clear that the treatise is a philosophical unity. While the treatise is generally agreed amongst commentators to not be a literary unity, Aristotle's metaphysical doctrine is fully developed throughout the entire fourteen books of the *Metaphysics*, and is therefore a philosophical unity. Some commentators claim that the *Metaphysics* is actually a set of distinct works that are not connected, such as Jaeger that support the so-called historic-genetic interpretation, have missed or glossed over one very obvious point in their readings. This point is that the aporias in Book Beta serve as an introduction to the studies found in the treatise, and that the content of those aporias and their solutions is what Aristotle dedicates his analyses to in the fourteen books found in the *Metaphysics*. The aporias that appear in Book Beta function as passageways into investigations into *prôtê philosophia*, and furthermore they also function as puzzles that Aristotle solves with the application of his metaphysical doctrine. Those that approach the *Metaphysics* from the historic-genetic interpretation will implicitly and explicitly deny any sense of a unitary reading because of the tendency within that historic-genetic interpretative approach to unnecessarily divide, criticize, and search for contradictions within the treatise. Such an approach may indeed lend support to show that the *Metaphysics* is not a literary unity,

which this study does not argue against, however, in doing so the historic-genetic interpretation also tends to apply its philological tools to denying that the treatise is a philosophical unity.⁷¹ One approach which remedies the deficiencies of the historic-genetic interpretation was presented in this thesis, i.e. approaching the *Metaphysics* by way of the puzzles in Book Beta. Another approach that provides support for the systematic-unitary interpretation is by reading the complete fourteen books of the *Metaphysics* as a whole, from beginning to end. It becomes apparent through such a reading that Aristotle's metaphysical doctrine is fully developed, and does not change fundamentally throughout the treatise.

The legacy of the *Metaphysics* and Aristotle's theory of substance has had a significant impact upon the history of Western philosophy. Medieval theologians and philosophers who considered seriously the doctrines found within the *Metaphysics* applied them to Christian theology. Since part of the study of first philosophy is ontological, and deals with being, and non-sense-perceptible substances, medieval theologians, who were also translators and transcribers, applied Aristotle's metaphysical doctrines to the theology of medieval Christianity. Notable Aristotelian philosophers throughout history include Boethius and St. Thomas Aquinas. It can be said that a great deal of Aquinas' theological writings are based on Aristotle's conceptualization that *prôtê philosophia* is comprised of both the *epistêmê* of being *qua* being and theology.⁷² Philosophers from the Scholastic movement include St.

Albertus Magnus, Duns Scotus, St. Anselm, and William of Ockham, and all of them necessarily considered Aristotle's theory of substance and his works concerning sense-perceptible and non-sense-perceptible substances, and applied the Aristotelian machinery to the great writings and discussions throughout Christian theological thought.

The Aristotelian legacy concerning topics that are metaphysical (and physical) has had a lasting influence beyond medieval thought. Modern philosophers such as Kant and Hume had to confront the evident truths that Aristotle stated were not only first principles but also necessary conditions for the understanding and existence of the world. Contemporary metaphysicians that analyze theories about causation and ontology always encounter foundational issues which were originally and systematically presented in the aporias found in Aristotle's *Metaphysics*, Book Beta. It has been a goal of this thesis to show that the initial hypostatizing of the foundations of *prôtê philosophia* is rooted in an investigation directed at a philosophical search for the resolutions to the aporias in Book Beta. Modern philosophers studying causation and ontology have returned to Aristotle's works throughout the 20th century. Perhaps the most logical place to commence a systematic investigation into first principles, ontology, and theology is in Book Beta of the *Metaphysics*. For it is the aporias in Book Beta and the accompanying puzzlement concerning the foundations of *prôtê philosophia* that serve as catalysts in the search for wisdom.

¹ Liddell and Scott's *Greek-English Lexicon*, pg. 215.

² Guthrie states: "An *aporia* (lit. 'no-way' or *cul-de-sac*) results when, arguing from a received belief, we reach a conclusion which is contradicted either by experience or by another received belief. This indicates that there is no thoroughfare (*poros*) that way." Guthrie, *Aristotle: An Encounter*, pg. 92.

³ Politis, *Aristotle and the Metaphysics*, pg. 69.

⁴ Concerning the characteristics of aporias Politis states the following: "It is also important to note that he argues that the first sense is primary and that the second sense is derived from the first. For he argues that it is because we think that what is responsible for our mental state of puzzlement (*aporia*) is, precisely, particular problems, that we call these problems: *aporiai*. But this view, which makes particular problems central to our very conception of puzzlement, arguably goes back to Plato, indeed the early Plato and the Socratic dialogues. For it is typical of Plato's Socrates to reduce his interlocutors to a mental state of puzzlement, perplexity, and even confusion, but to do so precisely by developing what he generally thinks are genuine problems about various matters." Politis, *Aristotle and the Metaphysics*, pgs. 69-70.

⁵ *The Dialogues of Plato*, Jowett.

⁶ Jaeger states the following: "Nothing but exact inquiry can determine in detail at what time and in what connexion this material arose, and how it is to be used in reconstructing Aristotle's philosophy. On no account must we, by assuming that it is philosophically homogeneous, cover up the problems which its content as well as its form presents at every step. We must reject all attempts to make a literary whole out of the remaining materials by rearranging or removing some of the books, and we must condemn the assumption which overhastily postulates their philosophical unity at the expense of their individual peculiarities. Each of these papers is the result of decades of untiring reflection on the same questions; each is a fruitful instant, a stage in Aristotle's development, an approach to the solution, a step towards new formulation. It is true that all the details are supported by that potential unity of the whole system which is active in every particular utterance of the philosopher; but no one which is content with that has the right to call himself familiar with the Aristotelian temper in its actuality. Aristotle has a dour, austere form; no wide-ranging survey, no genial, comfortable intuition, can really understand him. Rarely does he offer us a whole on which the eye can rest with pleasure. Only in the concrete details, only by intensive concentration, can his essence be grasped. For the actuality of *Nus* is life." Jaeger, *Aristotle. Fundamentals of the History of his Development*, pages 170-171.

⁷ Reale states the following: "We call the former the systematic-unitary interpretation insofar as it presupposes beyond any shadow of a doubt that the Aristotelian corpus, especially the *Metaphysics*, is the expression of a quite rigid

system and a deeply unitary thought. Therefore it proceeds toward the solution of problems related to the reading and to the philosophical understanding of the texts by giving *a priori* certainty to the solution of the various difficulties presented by the thought of Aristotle, but in a merely speculative manner.” Reale, *The Concept of First Philosophy and the Unity of the Metaphysics of Aristotle*, page 2.

⁸ *Metaphysics*, Book Beta, 995^a24-996^b4.

⁹ Aristotle is, in fact, the source for what we know today about many of the Presocratic philosophers and the views of the earlier thinkers are discussed at great length throughout his works.

¹⁰ Concerning this point Shields states the following: “So there is a science whose dedicated subject matter is being *qua* being (*to on hê(i) on*), an organized and articulable body of knowledge which attends not to beings of one sort or another, to living beings, or beings with magnitude, or beings which are mathematical abstractions. This science does not attend to beings insofar as they are one way or another, to beings in so far as they are quantities or beings insofar as they are relatives or even, it seems, beings insofar as they are substances. Rather, the science of being *qua* being is an inquiry into being-being insofar as it is being, full stop.

This announcement is doubly surprising. First, since a science requires a specific genus as its special object of study, if there is a science of being *qua* being, then its genus would seem to be being itself. That is, since optics studies the visible and zoology studies animals, one might well expect the science of being *qua* being to concentrate on the genus of being. Unfortunately, Aristotle elsewhere denies the existence of any such genus: being is not a genus. (*Apo* 92^b14; cf. *Top.* 121^a16-19, ^b7-9). Of course, this need not be a contradiction, since we may have here not an internal tension, but rather a simple change of mind. Then again, it need not even be a change of mind: Aristotle does not claim that there is no genus of being *qua* being, only that there is no genus of being. That is certainly fair enough. In that case, however, on the assumption that we continue to expect a single genus for each science, this response mainly postpones the issue by pointing directly to a new question: what is the genus of being *qua* being? If it is not being, because there is no such genus, then what might this genus be? Another way of asking this question is: what does ‘*qua* being’ add to ‘being’ such that it legitimates a science of being *qua* being when there is no science of being? All these questions are occasioned by the announcement of the science of being *qua* being, because all seek to reconcile what Aristotle has said, or seems to have said, about the prospects of such a science outside of the *Metaphysics*.” Shields, *Aristotle*, pgs. 237-238.

¹¹ Ross’s translation in English is ‘essential attributes,’ however; the phrase *per se* belongings is a more accurate phrase.

¹² Aristotle, *Metaphysics*, Book Epsilon 1025^b15-17.

¹³ Aristotle, *Metaphysics*, Book Epsilon 1025^b10-12.

¹⁴ Aristotle, *Metaphysics*, Book Epsilon, 1025^b21-25. “For the principle of production is in the producer- it is either reason or art or some capacity, while the principle of action is in the doer-viz. choice, for that which is done and that which is chosen are the same.”

¹⁵ Aristotle, *Metaphysics*, Book Epsilon, 1025^b21-26.

¹⁶ Aristotle, *Metaphysics*, Book Epsilon, 1025^b27-28.

¹⁷ Aristotle, *Metaphysics*, Book Epsilon, 1026^a9-10.

¹⁸ Aristotle, *Metaphysics*, Book Alpha, chapter two, 982^b5-8.

¹⁹ Patzig, Theology and Ontology in Aristotle's *Metaphysics*, in *Articles on Aristotle 3. Metaphysics* pg. 34.

²⁰ Patzig, Theology and Ontology in Aristotle's *Metaphysics*, in *Articles on Aristotle 3. Metaphysics* pg. 38.

²¹ Aristotle, *Metaphysics*, Book Gamma, chapter two, 1003^a33-34.

²² Shields states: "If we are prepared to grant that much, we can see both promise and problem associated with the apparatus of core-dependent homonymy as regards the Extension Problem. The promise is plain: core-dependent homonymy offers a framework within which claims about dependence can be rendered precise. More exactly, it offers a framework within which claims about dependence can be made precise without adverting to external considerations of an efficient causal sort. This is desirable because mere efficient causal dependence does not bring with it the sort of unity needed for *epistêmê*. A ship might depend upon a group of men, some ship builders, in the sense that they are its efficient cause, but Aristotle rightly shows no tendency to suggest that this suffices for there to be an *epistêmê* of man-and-ship. Rather, there is a branch of natural science which studies humans and a branch of productive science which studies shipbuilding." Shields, Being *qua* Being in *The Oxford Handbook to Aristotle*, pgs. 350-351.

²³ Chiba, Aristotle on Heuristic Inquiry and Demonstration of What It Is, in *The Oxford Handbook of Aristotle*, pg. 189.

²⁴ Chiba states: "Aristotle uses two adverbial expressions to show the different ways in which universal concepts and propositions can be examined: 'dialectically' (*dialektikôs*) and 'by the method of formal argument' (*logikos*). The first term describes the practice of dialectic, which examines *pro* and *contra* propositions endorsed by opposing viewpoints (e.g. 105^b31, 161^a33, 183^b3, cf. 403^a2). By contrast, the second term describes his general analysis of being or identity based on (e.g.) the predicables and categories, which is a prolegomenon to dialectical practice (e.g. 82^b35-83^a1, 1030^a25f.) Thus, for example, the term 'the what it was to be' (*to ti ên einai*) is introduced by the phrase 'to speak formally' (*logikôs*) in the *Metaphysics* (e.g. 1041^a28). While the dialectician seeks to examine propositions dialectically, the theory which underlies his practice is philosophically grounded. Put differently, when Aristotle writes of the theory of dialectic, he does so not as a dialectician but as a philosopher." Chiba, Aristotle on Essence and Defining-Phrase in his Dialectic, in *Definition in Greek Philosophy*, pg. 209.

²⁵ Politis, Aristotle and the *Metaphysics*, page 123.

²⁶ See Heraclitus, in *The Presocratic Philosophers*, Kirk, Raven, and Schofield, pages 188-189. Fragment 199: Sea is the most pure and the most polluted water; for fishes it is drinkable and salutary, but for men it is undrinkable and deleterious. Fragment 200: The path up and down is one and the same. Fragment 201: Disease makes health pleasant and good, hunger satiety, weariness rest. Fragment 202: And as the same thing there exists in us living and dead and the waking and the sleeping and young and old; for these things having changed round are those, and those having changed round are these. The above passages show how opposites are indeed connected, but when we add the important phrase "at the same time," we see that these fragments are not

damaging to the PNC. Fragment 199 is a clear example. Sea water is healthy for fishes, but is unhealthy for men. At one time, and for certain things sea water is healthy, but at another time, and for other things sea water is unhealthy. It is clear that these fragments are not damaging to the PNC.

²⁷ See Heraclitus, in *The Presocratic Philosophers*, Kirk, Raven, and Schofield, page 190. Fragment 204: God is day night, winter summer, war peace, satiety hunger (all the opposites, this is the meaning); he undergoes alteration in the way that fire, when it is mixed with spices, is named according to the scent of each of them.

²⁸ Aristotle, *Metaphysics*, Book Gamma, 1006^a9-11.

²⁹ Aristotle states: "Since we know when a deduction can be formed and how its terms must be related, it is clear when refutation will be possible and when impossible. A refutation is possible whether everything is conceded, or the answers alternate (one, I mean, being affirmative, the other negative). For, as has been shown, a deduction is possible both in the former and in the latter case: consequently, if what is laid down is contrary to the conclusion, a refutation must take place; for a refutation is a deduction which establishes the contradictory. But if nothing is conceded, a refutation is impossible, for no deduction is possible (as we saw) when all the terms are negative; therefore no refutation is possible. For if a refutation were possible, a deduction must be possible; although if a deduction is possible it does not follow that a refutation is possible. Similarly refutation is not possible if nothing is conceded universally; since refutation and deduction are defined in the same way." Aristotle, *Prior Analytics*, Book II, 20, 66^b4-17.

³⁰ In Barnes, the following is stated concerning Protagoras: "Protagoras, the first of the Sophists, hailed from Abdera. Our sources make him a 'hearer' of Democritus, his fellow-citizen (e.g., Diogenes Laertius, IX. 50 = **80 A 1**); there is no particular reason to doubt the story and there are visible links between various aspects of Democritean and Protagorean thought. According to Plutarch, Democritus attacked Protagoras' views on knowledge (**68 A 156**); and for that reason I shall consider Protagoras' epistemology before that of Democritus. Of all things a measure is man-of the things that are, that they are; of the things that are not, that they are not (**491: 80 B 1**)."³¹ Jonathan Barnes, *The Presocratic Philosophers Volume 2, Empedocles to Democritus*, pg. 239.

³¹ For Anaxagoras, the world is composed of contraries, and nothing perishes or comes to be. Things in the world are mixtures of these contraries, and there is no substance or essence, the world is only as what it appears to be. The following fragment is found in Kirk, Raven and Schofield: "All things were together, infinite in respect of both number and smallness; for the small too was infinite. And while all things were together, none of them were plain because of their smallness; for air and aither held all things in subjection, both of them being infinite; for these are the greatest ingredients in the mixture of all things, both in number and size." (*The Presocratic Philosophers*, 2nd Edition. Kirk, Raven and Schofield, Fragment 467, page 358.)

³² Aristotle, *Metaphysics*, Book Gamma, 1008^a20.

³³ Aristotle, *Metaphysics*, Book Gamma, 1008^b7.

³⁴ The following dialogue is found in Plato's *Theaetetus*:

Socrates: Bravely said, boy; that is the way in which you should express your opinion. And now, let us examine together this conception of yours, and see

whether it is a true birth or a mere wind-egg: -You say that knowledge is perception?

Theaetetus: Yes.

Socrates: Well, you have delivered yourself of a very important doctrine about knowledge; it is indeed the opinion of Protagoras, who has another way of expressing it. Man, he says, is the measure of all things, of the existence of things that are, and of the non-existence of things that are not: -You have read him?

Theaetetus: Oh yes, again and again.

Socrates: Does he not say that things are to you such as they appear to you, and to me such as they appear to me, and that you and I are men?

Theaetetus: Yes, he says so.

Socrates: A wise man is not likely to talk nonsense. Let us try to understand him: the same wind is blowing, and yet one of us may be cold and the other not, or one may be slightly and the other very cold?

Theaetetus: Quite true.

Socrates: Now is the wind, regarded not in relation to us but absolutely, cold or not; or are we to say, with Protagoras, that the wind is cold to him who is cold, and not to him who is not?

Theaetetus: I suppose the last.

Socrates: Then it must appear so to each of them?

Theaetetus: Yes.

Socrates: And “appears to him” means the same as “he perceives.”

Theaetetus: True.

Socrates: Then appearing and perceiving coincide in the case of hot and cold, and in similar instances, for things appear, or may be supposed to be, to each one such as he perceives them?

Theaetetus: Yes.

Socrates: Then perception is always of existence, and being the same as knowledge is unerring?

Theaetetus: Clearly. Plato's *Theaetetus*, 152^a. Translated by B. Jowett.

³⁵ See *The Presocratic Philosophers*, 2nd Edition. Kirk, Raven and Schofield, pages 352-384)

³⁶ See *The Presocratic Philosophers*, 2nd Edition. Kirk, Raven and Schofield, pages 402-433.)

³⁷ Heraclitus says, “Upon those that step into the same rivers different and different waters flow...They scatter and...and gather...come together and flow away...approach and depart.” Fragment 214, Heraclitus, in *The Presocratic Philosophers* 2nd Edition. Kirk, Raven and Schofield, page 195,

³⁸ Politis states: “In this striking passage (and especially 1010^b35-1011^a1) Aristotle makes three fundamental and closely related claims: first (^b35-36), what we perceive with our senses are objects other than and distinct from our sense perceptions; second (^b34 and ^b37-1011^a1), the objects that we perceive are the objects that cause our sense perceptions; and third (^b36-37), the objects that we perceive are essentially prior to our sense perceptions, i.e. they are independent of and causally explanatory of our sense perceptions. We may call this, ‘a causal realist theory of sense perception.’ It is a causal theory because it argues that the objects that we perceive are the objects that cause our sense perceptions. It is a realist theory because it argues, first, that what we perceive

with our senses are objects other than and distinct from our sense perceptions and, second, that the objects that we perceive are essentially prior to our sense perceptions, i.e. they are independent of and causally explanatory of our sense perceptions.” Politis, pages 182-183.

³⁹ Reale, pages 68-69.

⁴⁰ Aristotle, *Metaphysics*, Book Gamma, 1003^a22-23.

⁴¹ Aristotle, *Metaphysics*, Book Gamma, 1003^a33.

⁴² Aristotle, *Metaphysics*, Book Beta 997^a15.

⁴³ Aristotle, *Metaphysics*, Book Alpha 982^a2.

⁴⁴ Plato, *Symposium*, 210.

⁴⁵ Politis, *Aristotle and the Metaphysics*, pg. 85.

⁴⁶ Madigan states: “We may call these separate, or free-standing, intermediates to distinguish them from the intermediates alleged (cf.998^a7-19) to be present in perceptibles. The position attacked may be expressed as follows. Mathematical entities exist independently of perceptible things and Forms. They are intermediates; that is, they occupy a middle position between Forms and perceptible things, resembling Forms in being eternal and unchanged, but resembling perceptibles by including a plurality of individuals of the same kind (cf. aporia 13, 1002^b14-16; A6, 987^b14-18). The function of mathematical intermediates is to serve as objects of the mathematical sciences.” Madigan, pg. 55.

⁴⁷ Parmenides then raises another problem that historically has been known as the Third Man argument. Take the idea of largeness. If you observe a number of large objects it would be correct to say that they all participate in the idea of largeness. However, if you consider the idea of largeness which makes all things large, and large things together, another idea of largeness is formed which makes large things and the idea of largeness. This process results not only in a third large, but a continuing series of the form of largeness ad infinitum. This is clearly unacceptable to Socrates. Socrates replies to this problem by stating that the ideas exist only in our minds. Parmenides again rejects Socrates’ solution. Individual ideas must be thoughts of something which is, not of what is not. Individual ideas must also be a thought of a single thing that the mind recognizes in all things as corresponding to an idea. Socrates again tries to defend the Platonic ideas by positing them as patterns or paradigms in nature. Things resemble the forms by assimilation to these patterns. This is answered by Parmenides again by the argumentum ad infinitum. The forms are paradigms in nature. Things will be like them by assimilation. Therefore the individual and the idea will be alike. Then there will be likeness of the like. Two things that are alike will partake of the form of likeness. If the idea is like the individual and the individual like the idea then another idea of likeness will always be arising, and this will continue infinitely. We can see now some of the problems the ancient Greek philosophers faced when attempting to connect absolute truth with human truth. If the Platonic Forms exist, how can we have knowledge of them? Not through individuals because that would make them perishable and not absolute. Not in things that change. Not things in the visible world. Socrates affirms his difficulty in saying the Forms are absolute. Parmenides continues on further stating that Socrates only understands a small part of the difficulty that arises when you posit individuals as ideas. If you posit each different thing as a single idea, you separate that from all other things. If someone says that the

Forms exist, no one can completely deny that he is not correct. Only a man who denies the existence of the Forms with great knowledge and ability can only through a long difficult explanation keep a man from being convinced that they do indeed exist. Those who believe in the Forms believe that they are absolute. If they are absolute, then they do not exist in us. They exist in relation to each other, that is, Form to Form. They do not exist because of participation in the sensible world. Nor do things in the sensible world partake in the Forms or the world of the Forms. Things in the sensible world exist in relation to one another and not in relation to the Forms. Parmenides illustrates it with the following example. A master has a slave. This is only a relation between two people and there is nothing absolute in it. Take, however, abstractly, the idea of mastership. It is relative to the abstract idea of slavery. Mastership and slavery are abstract ideas independent and distinguished from the individual master and slave in the sensible world. If we have absolute knowledge, we will have absolute truth. If we have absolute knowledge of each kind we will have all answers to each kind of absolute being. Truth comes from our knowledge that is an understanding of each kind of our own being. Yet we do not have the idea of knowledge because Socrates admitted that we cannot have the ideas themselves in us therefore we do not have absolute knowledge nor knowledge of the Forms. If we do not have knowledge of the Forms because they are not in us then consequently we do not know the truth. If, however, there is absolute knowledge it would most likely be God who possessed it. If God has absolute knowledge, however, he would not have knowledge of human beings because the Forms and humans are not related, only to themselves. They are limited to their own sphere or world. Therefore God doesn't have any knowledge of humans, just as humans have no knowledge of the gods or anything to do with divinity. Parmenides used the preceding examples to show the young Socrates the difficulties that will be confronted by someone who posits the existence of the Forms. Socrates acknowledges that he too now sees the difficulties in positing the Forms. Parmenides cautioned Socrates that if a man heard these objections to the doctrine of the Forms he will ultimately deny that they exist. However, even if they do exist, by necessity man cannot know them, and his judgment will seem reasonable. It takes a remarkable man that comes to know essences, according to Parmenides. It is important to note here that Parmenides does not say that the Forms do not exist, only that there is great difficulty in proving their existence. This problem is troubling for Socrates and Parmenides. It was quite troubling too, for Plato, as we see. For if we cannot have knowledge of the Forms how are we to have knowledge of anything? Karuzis, pgs 8-10.

⁴⁸ Madigan states: "997^b32-4: The case for intermediates in 997^b25-32 rested on the distinction between sciences with perceptible objects, such as measurement, and sciences with non-perceptible objects, such as geometry. Here Aristotle questions the distinction. Measurement, he suggests, is not a science of perceptible and perishable magnitudes; for, if it were, then the disappearance of its perishable objects would entail the disappearance of measurement itself, which is taken to be absurd. The argument assumes both that a science perishes if its objects perish and that a genuine science does not perish. In the background is the assumption (which goes back at least as far as Parmenides, DK28 B 8. 19-21, 26-8, 35-8) that the object of science must be something permanent and so imperishable."

In *Phys.* II. 2, 193^b22-4^a12, and *Met.* M 3, 1077^b17-8^a31, Aristotle takes a different view. There the objects of geometry are changeable physical things, but the geometer thinks of them not as physical but as unchanging. Here Aristotle tries to break down the distinction between measurement and geometry by arguing that even measurement must have imperishable and non-perceptible objects. This does not count against the Platonist construal of geometry as a science of intermediates. If anything, it tends to suggest that even measurement is a science of intermediates, or at all events of some sort of non-perceptibles, though Aristotle does not make that point explicitly.

One way to defend the claim that the objects of measurement are perceptible and perishable would be to say that the perishing of these or those perceptible and perishable objects of measurement would not have to involve the end of measurement itself; measurement might survive the fall of Atlantis. Another would be to say that if all extended objects were to perish (*per impossibile* in an Aristotelian world, though not in a Platonic world; cf. *Tim.* 38^b^c, 41^{a-b}), then there would be nothing for measurement to be about, and it too would perish, but that there would be nothing absurd about its perishing; a Platonist might take this as confirming that measurement is not a genuine science." Madigan, pg. 58.

⁴⁹ Madigan states: "1. *The Pythagoreans.* At N 3, 1090^a20-5, Aristotle credits the Pythagoreans with the view that beings are numbers: that is, not that numbers exist as separate from beings, but that beings consist of numbers. The claim that mathematical entities are present in perceptible things might be understood as a paraphrase of this view. Clearly the Pythagoreans held that perceptibles are in some way or other mathematical, and perhaps they tried out the formulation that numbers are present in perceptibles. But at A 6, 987^b27-9, Aristotle says that the Pythagoreans thought that things were numbers and did not posit mathematical as intermediates. In any case, it would be anachronistic to credit the original Pythagoreans with a theory of intermediates, because talk about intermediates (998^a7) presupposes the Platonic distinction between perceptibles and Forms.

2. *Plato.* At *Phd.* 102^d5-103^a3 Plato has Socrates distinguish what he calls the tallness-in-us and shortness-in-us from the Forms tallness itself and shortness itself. It is not entirely clear how far Plato is here committing himself and to what. Talk about things 'in us' has been taken as an indication that he maintains a 'tripartite ontology' of Forms, perceptibles, and immanent characters; cf. Vlastos (1981^a: 83-6). If that is right, then Plato's doctrine matches the doctrine discussed here. But talk of things 'in us' may be just a way of speaking about the presence of Forms in things, without any commitment to a third class of entities distinct from Forms and perceptibles; cf. Gallop (1983:195-6). Whatever we make of the *Phaedo*, Aristotle had other grounds for construing Plato as positing immanent characters as a distinct third class. The dilemma of participation in *Parm.* 131^{a-c} pictures Forms as divisible into parts, with each participant having a part of the Form. *Parm.* 133^a-134^a suggests that Plato was concerned to avoid a complete separation of Forms from perceptibles. *Phil* 23^c-27^c construes perceptible things as produced by the mixture of something unlimited with a limit or limiting factor. None of this is quite the same as saying that intermediates are present in perceptibles-terminology not found in the dialogues-but Aristotle could have paraphrased the statements of the dialogues in this terminology. Still, *Met.* A 6, 987^b27, reports that Plato held a theory of

intermediates existing alongside (*para*) perceptibles, and this raises the question of why he would have held another theory of intermediates present in perceptibles.

3. *Eudoxus*. At A 9, 991^a14-19, while arguing that the Forms contribute nothing to perceptible things, Aristotle considers the possibility that they might contribute something to perceptible things if they were present in them; he says that this view, which was held by Anaxagoras, Eudoxus, and certain others, is easily upset. This text imputes to Eudoxus not the view that intermediates are present in perceptibles, but the view that Forms are present in perceptibles. Still, Aristotle suggests at 998^a11-13 that these two claims stand or fall together.

Perhaps Eudoxus thought that Forms were present in perceptible things precisely by virtue of the presence of intermediates in those things.” Madigan, pgs. 61-62.

⁵⁰ Cherniss states: “The report of Plato’s philosophy which follows must be read against the background of this account and as part of Aristotle’s attempt to prove that no one had suggested a type of causality other than his four but that all had darkly fumbled for just these causes (988 A 20-23, cf. *Crit. Pres. Phil.*, p. 351). The interpretation of Pythagoreanism thus serves as a transition to the chapter on Plato, whose system, Aristotle says, arose after the philosophies just mentioned, following them in most respects but also having peculiar characteristics, foreign to the philosophy of the Italians. Plato in his youth first became intimate with Cratylus and the Heraclitean doctrines that all sensible things are in constant flux and there is no knowledge concerning them; and this opinion he afterwards retained. In accepting the teaching of Socrates, who was concerned about ethical matters and not at all about the whole of nature but who within the field of his interests was looking for the universal and was the first to fix his attention on definitions, Plato conceived that the object of this procedure must be other than perceptible things for the reason that the common definition cannot refer to any of the sensibles which are constantly changing. He therefore called such things ‘ideas’ and said the sensibles are all called after these and in accordance with them, for it is by participation that there exist the multiplicities of things called by the same names as the ideas. Thus far the passage is a simple account of Plato’s theory and the origins from which it sprang; but with the mention of ‘participation’ Aristotle begins to introduce an element of critical interpretation. In *μέθεξις*, he says, Plato merely introduced a change of terminology, for the Pythagoreans say that things exist by imitation of the numbers and Plato, altering the word, says ‘by participation.’ Yet what the participation or the imitation of the ideas may be they left an open question.” Cherniss, pgs. 177-180.

⁵¹ The following dialogue is found in Plato’s *Phaedrus*:

Socrates: I cannot help feeling, Phaedrus, that writing is unfortunately like painting; for the creations of the painter have the attitude of life, and yet if you ask them a question they preserve a solemn silence. And the same may be said of speeches. You would imagine that they had intelligence, but if you want to know anything and put a question to one of them, the speaker always gives one unvarying answer. And when they have been once written down they are tumbled about anywhere among those who may or may not understand them, and know not to whom they should reply, to whom not: and, if they are maltreated or abused, they have no parent to protect them; and they cannot protect or defend themselves.

Phaedrus: That again is most true.

Socrates: Is there not another kind of word or speech far better than this, and having far greater power—a son of the same family, but lawfully begotten?

Phaedrus: Whom do you mean, and what is his origin?

Socrates: I mean an intelligent word graven in the soul of the learner, which can defend itself, and knows when to speak and when to be silent.

Phaedrus: You mean the living word of knowledge which has a soul, and of which the written word is properly no more than an image?

Socrates: Yes, of course that is what I mean. And now may I be allowed to ask a question: Would a husbandman, who is a man of sense, take the seeds, which he values and which he wishes to bear fruit, and in sober seriousness plant them during the heat of summer, in some garden of Adonis, that he may rejoice when he sees them in eight days appearing in beauty? At least he would do so, if at all, only for the sake of amusement and pastime. But when he is earnest he sows in fitting soil, and practises husbandry, and is satisfied if in eight months the seeds which he has sown arrive at perfection?

Phaedrus: Yes, Socrates, that will be his way when he is in earnest; he will do the other, as you say, only in play.

Socrates: And can we suppose that he who knows the just and good and honourable has less understanding, than the husbandman, about his own seeds?

Phaedrus: Certainly not.

Socrates: Then he will not seriously incline to ‘write’ his thoughts ‘in water’ with pen and ink, sowing words which can neither speak for themselves nor teach the truth adequately to others?

Phaedrus: No, that is not likely.

Socrates: No, that is not likely—in the garden of letters he will sow and plant, but only for the sake of recreation and amusement; he will write them down as memorials to be treasured against the forgetfulness of old age, by himself, or by any other old man who is treading the same path. He will rejoice in beholding their tender growth; and while others are refreshing their souls with banqueting and the like, this will be the pastime in which his days are spent.

Phaedrus: A pastime, Socrates, as noble as the other is ignoble, the pastime of a man who can be amused by serious talk, and can discourse merrily about justice and the like.

Socrates: True, Phaedrus. But nobler far is the serious pursuit of the dialectician, who, finding a congenial soul, by the help of science sows and plants therein words which are able to help themselves and him who planted them, and are not unfruitful, but have in them a seed which others brought up in different soils render immortal, making the possessors of it happy to the utmost extent of human happiness.

Phaedrus: Far nobler, certainly. Plato, *Phaedrus*, 276-277.

⁵² Although the arguments or ideas pertaining to a theory that are found in that which is written may differ from that which is unwritten, both types of teaching must be considered to be of equal importance. Perhaps it is beneficial to consider this equality of importance in conjunction with the following passage from Aristotle in *Physics*, Book IV: “This is why Plato in the *Timaeus* says that matter and space are the same; for the ‘participant’ and space are identical. (It is true, indeed, that the account he gives there of the ‘participant’ is different from what he says in his so-called unwritten teaching. Nevertheless, he did identify

place and space.) I mention Plato because, while all hold place to be something, he alone tried to say what it is." Aristotle, *Physics*, Book IV, 209^b11-16.

⁵³ Aristotle, *Metaphysics*, Book Alpha 988^a7.

⁵⁴ See Karuzis, Some Problems of the One Over Many in Plato's *Parmenides*.

⁵⁵ Aristotle states: "Further, of the more accurate arguments, some lead to ideas of relations, of which we say there is no independent class, and others involve the difficulty of the 'third man'." Aristotle, *Metaphysics*, Book Alpha 990^b16-17.

⁵⁶ Aristotle, *Metaphysics*, Book Alpha 991^a7.

⁵⁷ Aristotle, *Metaphysics*, Book Alpha 991^a20-23.

⁵⁸ Aristotle, *Metaphysics*, Book Alpha 991^a26-28.

⁵⁹ The four arguments that argue in favor of the immortality of the soul that are presented by Plato in the *Phaedo* are: 1.) The cyclical argument. 2) The Theory of Recollection. 3.) The affinity argument. 4.) The argument from Form of Life.

⁶⁰ Aristotle, *Metaphysics*, Book Alpha 991^b3-4.

⁶¹ Aristotle, *Metaphysics*, Book Alpha 991^b23.

⁶² See Aristotle's *Topics* for a full treatment of the predicables.

⁶³ The following passage is found in Plato's *Meno*: "And how will you enquire, Socrates, into that which you do not know? What will you put forth as the subject of enquiry? And if you find what you want, how will you ever know that this is the thing which you did not know?" Plato, *Meno*, 80.

⁶⁴ Politis states: "The present aporia takes up the question, What basically is there? Only sense-perceptible things, or also non-sense-perceptible things? We may note that the reality of sense-perceptible things is taken for granted here, the question being whether, 'in addition to' or 'besides' (*para*) these, we should suppose that non-sense-perceptible things are real. It is also important to note that by 'sense-perceptible things' (*aistheta*) he means 'changing things' (*kinoumena*); and by 'non-sense-perceptible things' he means 'changeless things' (*akineta*)." Politis, pgs.84-85.

⁶⁵ Aristotle, *Metaphysics*, Book Beta 997^a34-35.

⁶⁶ Politis states: "This aporia arises because, on the one hand, there are very different kinds of explanations and causes (e.g. the formal and the material cause); but, on the other hand, metaphysics was characterized as the science of the ultimate causes and explanations of all things, hence as the science of all the different kinds of causes and explanations of things." Politis, pg. 83.

⁶⁷ Bekker, Immanuel. *Aristotelis Opera* 2 vol. *ad locum*.

⁶⁸ De Haas states: "In the *Republic* and the *Philebus* Plato formulated the ideal of an all-embracing science of everything which he called dialectic, and for which the mathematical sciences constituted the necessary preparation. This ideal he left for his contemporaries and successors to take up one way or another. As is well-known, we find numerous arguments throughout the Aristotelian corpus that state or betray Aristotle's dislike of such a science of everything, more in particular a dislike of the Platonic version of such a science. Aristotle has several lines of attack on Plato's ideal which can be subsumed under the three headings of the three-element-rule we encountered above: subject matter, properties and axioms or common principles.

First, Aristotle rejects the proposed subject matter of this rival science, the Ideas with the Idea of the Good as their fountainhead. In aporia 5 we have seen a

small part of the famous list of arguments Aristotle used to question the existence of the Ideas. He also questions whether the Good can serve as the principle of everything by pointing out that the term 'good' is used in different genera of being. Hence, the study of the good cannot belong to a single science. This argument rests on a number of Aristotelian claims some of which we have already seen. For one, a science is characterized by a single genus, and when 'good' is found in different genera of being it does not constitute a unified domain. If so, the prohibition on crossing from one domain to another renders a coherent science of the Good impossible." Frans De Haas, Aristotle's *Metaphysics* Beta, pg. 100.

⁶⁹ Lear states: "God, as we have seen, is a substance without matter. Everything without matter is indivisible, and, since God is an eternal actuality, he is actually indivisible. Since he thinks himself, the object of his thought is actually indivisible. It does not follow that his thinking bears no relation to the world or that his self-contemplation is barren. For the possibility lies open that God thinks the (essences embodied in the) world as a whole. This thinking would differ from the essences found in the world as a higher-level actuality differs from its lower-level counterpart. The lower-level essences, one might say, are both potentially divisible and potentially indivisible. It is possible for us to think this essence, then think that essence; the essences found in the world would then be actually divided. God's thinking, by contrast, is actually indivisible. He does not first think this essence, then that: he thinks the essences found in the world as a whole. So God, who is identical to his thinking, is not to be found in the world. Further, his thinking differs from the second-level activity which constitutes our contemplating this or that aspect of the world. And so it is at least possible for our contemplation to be of composites and to occur in some time and yet for it still to be true that both we and God are contemplating the same essences-in the one case as divided, in the other case as indivisible. Aristotle's conception of God thinking himself would then be as rich as the conception of contemplating the world as a whole." Lear, pgs. 305-306.

⁷⁰ See Kei Chiba's paper 'Aristotle on Heuristic Inquiry and Demonstration of *What It Is*' in *The Oxford Handbook of Aristotle* for a full treatment of this issue.

⁷¹ Reale states: "Concerning the literary unity of the *Metaphysics*-that is, concerning the fact that it is a book as we understand such a term today, namely one organic whole divided into parts and chapters, according to a pre-established order-the critics of the previous century had already raised many doubts and many reservations. Some scholars had even declared as spurious whole books or parts of them, inasmuch as they contained statements that seemed opposed to those considered genuine and authentic. They tried to reconstruct an order among the books contained in the work, different from the order in which they have come down to us. Finally they thought that the *Metaphysics* came from a collection of different works, set down in the indexes of Diogenes Laertius, in which there is no mention made of the *Metaphysics*. Despite everything there is no substantial doubt that a *unity of doctrine* existed in the various books." Reale, pg. 13.

⁷² Gilson states: "The answer is quite clear in the doctrine of Thomas Aquinas, in which God is the cause of all that is, including even matter. The doctrine of creation is bound to modify the notion of metaphysics itself, in that it introduces in the realm of being a first cause to whose causality everything is strictly

subjected. This is why, in his *Contra Gentiles*, in which he does not speak as a commentator of Aristotle, but in his own name, Thomas Aquinas can take over the very formulas of Aristotle, yet give them a distinctly new turn. For it still remains true to say that perfect knowledge is knowledge through causes, but metaphysical knowledge no longer is sufficiently defined as the science of being through its first causes; what metaphysics really is, is the science of being through its first 'cause.'

This is why, in Thomas Aquinas' own doctrine, inasmuch as he wants to know reality through its first cause, since God is that first cause, man naturally desires, as his ultimate end, to know God. Aristotle therefore was speaking better than he knew, when he said that metaphysics truly deserves the name of 'divine science,' for what it ultimately aims to achieve is to know God: the ultimate end of metaphysics is the same as the ultimate end of man. What deeply alters the Aristotelian notion of metaphysics in the doctrine of Thomas Aquinas is the presence, above natural theology, of a higher theology, which is the science of God as known through revelation." Gilson, pgs. 156-157.

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