

LOGIC AS AN INTEGRAL ASPECT OF PHILOSOPHY PROPER: A CASE
STUDY OF THOMAS HOBBS

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ABSTRACT

LOGIC AS AN INTEGRAL ASPECT OF PHILOSOPHY PROPER: A CASE STUDY OF THOMAS HOBBS

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This thesis addresses itself to the following questions: 1) What is the relationship between logic and philosophy? 2) How do logic and philosophy affect each other? To find the answers to both questions, it offers a methodological-cum-historical case study of Thomas Hobbes. Concerning the first question, the relationship between logic and philosophy has been discussed since Aristotle, for whom the former is an organon to the latter. Logic does not have an existence independent of philosophy. As for the second question, if it is an organon, then logic offers philosophy viable and valid forms of reasoning. As a result, other questions appear about the idea of progress in logic; for example, if there is progress in logic, what is its nature and how can we capture it? Hobbes's philosophical system as a whole is a rich ground to study these questions. He defines logic as identical with philosophy and presents a philosophical system so we can see their relationship and understand how we can capture logical progress by looking at the progress in philosophy.

Keywords: Thomas Hobbes, Medieval Logic, Organon, History of Logic

ÖZ

FELSEFENİN TAMAMLAYICI BİR PARÇACI OLARAK MANTIK: THOMAS HOBBS ÜZERİNE BİR VAKA ÇALIŞMASI

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Bu tez takip eden konuları ele almaktadır. 1) Mantık ve felsefe arasındaki ilişki nedir? 2) Mantık ve felsefe birbirini nasıl etkiler? İki soruyu da yanıtlamak adına Thomas Hobbes, metodolojik ve tarihsel biçimde vaka çalışması olarak alınmıştır. İlk soru konusunda, mantık ve felsefe arasındaki ilişki meselesi, mantığın felsefeye bir organon olduğunu söyleyen Aristoteles'ten beri ele alınmıştır. Mantık, felsefeden bağımsız bir varlığa sahip değildir. İkinci soru için ise, eğer organonsa, mantık felsefe için uygulanabilir ve geçerli akıl yürütme formları sunuyor olmalıdır. Sonuç olarak da mantıkta ilerleme fikri hakkında sorular doğmaktadır; örneğin, mantıkta ilerleme varsa, bunun doğası nedir ve biz bu ilerlemeyi nasıl yakalayabiliriz? Hobbes'un felsefi sistemi bir bütün olarak bu sorular için zengin bir temeldir. Çünkü, mantığın felsefeyle aynı olduğunu söylüyor ve bütün bir felsefi sistem sunuyor, bu sayede biz de mantık ve felsefe arasındaki ilişkiyi görüyoruz ve felsefedeki ilerlemeye bakarak, mantıksal ilerlemeyi nasıl yakalayabileceğimizi anlıyoruz.

Anahtar Kelimeler: Thomas Hobbes, Orta Çağ Felsefesi, Organon, Mantık Tarihi

To my grandfathers

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CHAPTER 1

INTRODUCTION

Argumentation is generally believed to be the basis of philosophical conducts as one should construct their accounts in a sound and open way so that they are available for others to check their correctness and validity. In other words, without the demonstration of how a particular conclusion is reached, an account cannot be considered feasible as well as acceptable and valid. Talking about valid reasoning and argumentation brings logic to mind. Jonathan Barnes claims that logic is an instrument that one needs to master before going on with philosophy itself (Barnes 531). In a similar fashion, Peripatetics accepted logic as a tool for philosophy and this is the understanding of logic as *an organon*. So, logic is just a tool that helps one in argumentation while they are constructing their account. If we consider this idea true, logical progress would be nothing, but an improvement regarding methods and means of argumentation. Also, the improvements taking place in logic would be explained as occurring only when philosophy demands or needs them. This interpretation (of the understanding of logic as an organon) implies that logic has no internal drive or process that is the cause of the improvements in itself, but rather logic progresses with external causes. However, in this study, I will argue against this view by offering an example that show that taking logic as an organon overlooks some parts in the history of logic. For instance, in their renowned work *The Development of Logic* (1971) Kneales' claim that between the fifteenth and the middle of the nineteenth century there was nothing much to talk about concerning the logical works (Kneale and Kneale 298). The starting point of this claim is their definition of logic. At the beginning of the book, they define logic as the principles of valid inference and the study of validity (Kneale and Kneale 1). Even though this definition is not wrong, it is not fine enough

to pick up every instance of progress in logic because the understanding of a discipline evolves throughout the time and it will be seen that it is the case for logic, too. Therefore, Kneales' claim that medieval logic does not contain any significant progress comes from their use of absolute definitions of logic. However, there were many logical studies during the period in question that brought about some progress in logic.

On the other hand, unlike Peripatetics, Stoics didn't celebrate the idea of logic as an instrument. For Stoics, logic was not only a method of argumentation but it also included ways of producing knowledge such as dialectic, (Stoianovici 126). In that sense, Stoics saw logic as a part of philosophy. In a similar way, I will claim that logic is an inseparable part of philosophical activity and, therefore, cannot be studied independently from philosophy. To establish this, I will show that there is a similarity between the history of logic and the history of philosophy. Because, when there is a progress in logic, there is also a progress in philosophy, or vice versa. Therefore, besides being closely related to each other, their histories might tell something about their roles to each other.

And trying to capture the progress in logic, brings another important topic for this thesis to address; logical progress and philosophical progress goes hand in hand, in other words, it is not the case where there are many philosophical studies and none logical. Because when we look at the history, we see that the times that contain an increase in the number of logical works reciprocate to the times that also contain an increase in the philosophical works. That is why, I claim, to capture the progress in any discipline, in our case logic, it is better to analyze the times when there are many things happening in the many aspects of the world.

This study will show that only if we analyze the history of logic in relation to philosophy in a particular period of time, we can provide an account of it. Because when it is investigated, one can see that those philosophically rich periods are also rich in terms of logics. This does not mean that there are times where people happen to be more productive; rather, it means that philosophy and logic nurture each other in such

a way that progress in each domain come about together. To support my thesis, I will conduct a case study of Thomas Hobbes (1588-1679). Hobbes is a perfect example to show the two main points of this thesis; first, he lived in the time when there was a turmoil both in the society and in the intellectual community, and secondly, he employed logic in such a way that it was the basis of his whole philosophy and cannot (or should not) be considered separately. Besides his books mainly dealing with politics, such as *De Cive* (1642) or *Leviathan* (1651), he also wrote about natural philosophy, for example *De Corpore* (1655), *De Homine* (1658). *De Corpore* has a remarkable chapter dedicated to logic that is called *computatio sive logica*. Taking his cue from there, broadly speaking, he builds his natural philosophy on logical grounds, and for this aim, he also articulates his understanding of logic and epistemology. This makes him a perfect example of what this thesis claims about the relationship between logic and philosophy. To understand Hobbes's approach to both philosophy and logic and to see if any progress was achieved, we need to consider briefly the philosophical and logical studies of medieval times.

The first chapter examines the logical works conducted in the medieval times. This thesis will show that to call medieval times as "dark ages," especially with regards to logic, is not correct. Since the topics introduced in the medieval times affected the later works of philosophy of language and logic, it is crucial to learn the medieval logic. Moreover, the medieval issues were still the main issues in the later periods, such as *signification* or *the problem of universals*, especially during the 16th and 17th century philosophies, and that is why understanding the medieval philosophy would enable us to have a better understanding for Hobbes's philosophy.

In the second chapter, I give a short biography of Hobbes in order to see the times he lived in, and how did it affect his point of view in terms of philosophy. Even though England was already entangled enough, Hobbes also got to travel around Europe several times and witnessed variety of problems that other intellectuals were facing. For example Hobbes visited Galileo Galilei while Galileo was in home arrest in 1636 (Martinich 91). Those trips and encounters are influential moments in Hobbes's life that shaped his views. And I believe that learning the life that one had led is crucial when understanding their philosophies, that is why I allocated one whole chapter for

Hobbes's biography. Because the events and people they encounter throughout their lives have an impact on their views, and it can be about anything. Therefore, to realize and understand what was going on both in that particular person's life but also in the world around them gives information about the way their thoughts shaped or gives reasons for their attitudes.

The third chapter deals with Hobbes's natural philosophy and different aspects of it such as his approach to the method of philosophy, his ideas concerning space and time and also his understanding of cause-and-effect relation. Hobbes builds his ideas in such a way that they come together and create a one whole, i.e., his understanding of logic is not separate from his general philosophy and is crucial to it. Therefore, to be able to talk about his logic, one needs to understand his views of natural philosophy and it is crucial to consider them as contributing parts of each other.

Hobbes's logic is explicated and discussed in detail in the fourth chapter. According to Hobbes, reasoning (or, logic) is the same with computation, however generally computation is employed to refer processes that include numbers, but in Hobbes's case computation is not necessarily the computation of numbers, it can be of names (Hobbes, *De Corpore* 3). In our minds, we make computations of names and thanks to that ability, we are able to think, philosophize, or even, make the very simple deductions such as attributing "animate" to the object that we saw to be moving. Therefore, we use names to compute, and that is why Hobbes puts an emphasis on the analysis of names, their different types and various roles they play according to the place they have in a sentence.

Moreover, Hobbes mentions *abuses of speech* that which leads to ambiguities or paradoxes. This is again a remarkable point of Hobbes's system, the reason why Hobbes mentions and wants to avoid those abuses is the fact that he believes that those abuses cause to misunderstandings, which eventually lead to *vain philosophy*, or, *Aristotelian metaphysics* (Hobbes, *Leviathan* 671–72). Later in this chapter, different ways of producing knowledge are analyzed. This examination shows the interdependence of logic to philosophy and vice versa from Hobbes's viewpoint.

It will be shown that philosophy, logic, and the other events happening in the world fluctuates together because logic itself is the way of producing knowledge and necessity of knowledge peaks when problems in the world need answers urgently. And Hobbes as a case study presents an example of this since while world was dealing with many different problems in very different areas of life, there was also an increase in the philosophical and logical works as illustrated by Hobbes. Another issue this thesis highlights is that defining logic only as a tool and writing a history of it would misrepresent the history as it is explained in the medieval logic chapter. There are two important points that need to be noticed here; firstly, if logic is only a tool that philosophy makes use of, does this mean that logical progress can happen only due to philosophical needs? If that is not the case, how does logic progress? And the second point is that sticking to specific definitions while writing a history causes problems as that would mean to overlook some works or events happened in certain time zones.

CHAPTER 2

MEDIEVAL LOGIC

Scholastic philosophy is mainly based on the theological doctrines of the Latin Catholic Church. But once we put aside religious aspects of this doctrine, there is still a lot that is going on, especially since there is a great emphasis on dialectic reasoning. There are different definitions of dialectic reasoning. Bocheński, for example, claims that dialectic is nothing other than a *discussion between two people* (Bocheński 31).

Similarly, moving from the etymological root of the name, dialectic can be interpreted as a *discourse involving two parties*¹. Later, Bocheński also asserts that dialectic is “a criticism wherein lies the path to the principles of all inquiries” (Bocheński 50). This description is similar to the definition given by a medieval thinker Peter of Spain (d. 1277), according to which dialectics is the “art that holds the road to the principles of all methods and therefore it should be first in the acquisition of all the sciences” (Lagerlund 315). Taking those different interpretations into account, we can understand that logic plays an important role in Scholastic philosophy because dialectic reasoning is basically a way of ratiocination that considers arguments and counter-arguments with the desire to reach the truth. In other words, because of this understanding of logic, their logic was directly related to knowledge production and since philosophy often deals with the ways we attain knowledge or with different aspects of knowledge itself, it can be concluded that the Scholastic philosophy depended on logic. With this regard, Scholastic philosophy used logic for similar reasons with the Sophists, namely, for the sake of argumentation.

¹ In Greek, ‘dia’ means ‘two’ and ‘logos’ means ‘discourse’ (Kretzmann and Stump 40).

Sophists were teachers of virtue, living in Ancient Greece during the 5th century B.C. As they were also teaching rhetoric (i.e., “the art of discussion, persuasion”), they needed to master argumentation methods to convince people. That is why logic was essential for Sophists, and they employed logic as a tool for argumentation and persuasion. In a similar fashion, Aristotle’s (384-322 BC) understanding of logic was also similar to the Sophistic approach, and he accepted logic as a tool for reasoning. Anicius Manlius Severinus Boethius (475-526) translated five chapters (*Categories, On Interpretation, the Prior Analytics, the Topics, the Sophistical Refutations*) of Aristotle’s *Organon* in earlier medieval times (Uckelman 1). Those translations had a huge impact on philosophical inquiries. As John Marenbon claims, the twelfth century’s logic was the product of Boethius’s translations (Marenbon 65).

Sara Uckelman claims that the ones that call the Middle Ages the dark ages are the ones that are not familiar with the history of logic (Uckelman 1). Considering the range of topics that the medieval logicians studied and the depth of those studies, it is impossible to disagree with Uckelman. Medieval logic can be considered to be the continuation of the Aristotelian tradition. However, this claim is only partially true, and to take it as the right explanation would be a great injustice to medieval logic. Besides studying Aristotelian themes, medieval logicians also introduced a great number of new issues to logic; for example, *sophismata* is one of those issues that was originated in the medieval study of logic. Medieval understanding of logic often dealt with linguistic problems, such as insolubilia, modal propositions, supposition, and the analysis of propositions (Novaes 434). And this shows that medieval logic did not only consist of syllogisms but also of understanding the language and the roles of the different parts of speech. This is important because it widens the extent of the study of logic, and it is like taking a step back to capture a bigger picture; where one needs to define and establish rules concerning not only propositions that make up a syllogism but also the very parts of a syllogism such as *verbs, names*, etc. It can be said that this change of direction in the logical focus from syllogism to linguistics could actually have been for the sake of syllogisms. In other words, in order to understand how syllogisms work, first, we need to recognize the characteristics of the parts that make up a syllogism or how do they function depending on the place that they hold in a

proposition. As William of Sheerwood (1190-1249) claims, to understand a syllogism, one needs to understand the components of it, which are namely terms, and propositions (qtd. in Uckelman 2). And this is what is meant by *linguistics*. Therefore, Medieval logicians studied logic with a linguistic perspective, meaning that they analyzed the properties and functions of the parts of the language and their relations with each other.

In medieval times, logic and dialectic were often used interchangeably² (Ashworth 633–34). This usage shows us that logic was not seen only as a formal device but also as a method of reasoning. In that way, it becomes clear that while logic can be considered a tool to show that reasoning is valid or invalid, its role in knowledge production cannot be overlooked. In that sense, medieval understanding of logic can be said to resemble the dialectical method. Because through dialectical reasoning, just like one does by logical reasoning, one reaches a conclusion which is a piece of new knowledge. With a similar train of thought, according to Thomas Aquinas (1225-1274), logic is both an art and also a science; it is an art because it produces something new, in the sense that it creates something new, and it is a science since it aims the certain possession of truth by using demonstration as a tool (Schmidt; van der Lecq). Van der Lecq asserts that dialectics is the *logic of discovery* in the sense that it searches for a truth that it does not yet possess (van der Lecq 372). From this claim, we can see that logic is very similar, if not the same, as dialectics, especially if we were to define sciences according to their subjects, which in our case is the true knowledge (both in logic and in dialectics). That is why medieval consideration of logic and dialectic as referring to the same concept is not problematic.

When we take a look at the education system in the medieval ages, we see how essential logic was to medieval teaching—the undergraduate university curriculum in medieval times was composed of two essential groups of teaching: *trivium* and *quadrivium*. Trivium consists of *logic* (also referred to as *dialectic*), *grammar*, and *rhetoric* (Marenbon 72). There is also another set of disciplines called *quadrivium*,

² See *trivium* in the next paragraph.

which is made up of *mathematics, astronomy, geometry, and music* (Huaping 45). Quadrivium and trivium together are called *the seven liberal arts*. In a way, a student needed to master logic, grammar, and rhetoric even just to be able to go on with their studies. As was mentioned in the previous paragraph, logic had special importance because a student would not only use it in syllogisms but also in debates with others by referring to the dialectical aspect of logic. This is why logic was important; to enable people to express themselves clearly and also to make them better disputers. In a way, it is the sophistic attitude, using logic to win an argumentation. It becomes particularly important in the later life of the students those who take up careers as scientists or politicians.

2.1. Periodization of Medieval Logic

There are different approaches when it comes to the periodization of medieval philosophy. While some group medieval logic according to the logicians, just by putting them on a timeline in order and dividing them, the others group the study of logic in the medieval times with regards to the topics that were mainly studied. That is the reason why there is not one accepted way of representing the history of medieval logic. For example, from one point of view, medieval logic from Boethius until Peter Abelard (1079-1142) is called the old logic (*logica vetus*), and the remaining Medieval period (from the 12th century to the Renaissance) is called the new logic (*logica nova*) (Lagerlund 282–83). *Logica vetus* is also called Boethian logic (Cameron 195)³. However, the distinguishing character of the *logica nova* period is the new translations of Aristotle's works (*Prior Analytics, Topics, and Sophistical Elenchi* (Lagerlund 283)). Regardless of this fact, even though there were new translations of Aristotle, for example, the translation of *Posterior Analytics* by James of Venice (fl. 1125-1147) (Ashworth), in the *logica nova* period, logicians of that group did not spend their whole

³ Because almost every text that were used in that time were made available by Boethius (Cameron 195)

time interpreting or commenting on Aristotle; instead, what they did was to focus deeper on the already existing concepts such as syncategorematic terms (Rivero 136–37). Similarly, they also worked on the *properties of terms* such as *supposition* or *signification*. They were newly coined terms to the study of logic. But again, they focused on those topics since they are the components of the language.

However, there is another periodization of medieval philosophy. Józef Maria Bocheński claims that there are three stages of Medieval Logic: transitional (up to Abelard), creative (from Abelard to the 13th century), and the period of elaboration (from Ockham to the end of the middle ages) (Bocheński 149). This classification is done according to the themes studied in those times and whether there are new themes or the old themes continued to be studied. For example, Bocheński claims that until Abelard, there was nothing much done in terms of logic in the transitional era, there were no noteworthy topics that were newly introduced, and the knowledge of the prior works was little (Bocheński 149). However, the remaining two periods, especially the period of elaboration, contain a lot of logical works (for example, John Buridan's (1301-1358) *Summulae de Dialectica*, Peter of Spain's *Tractatus* (1230), and William of Ockham's *Summa Logicae* (1323)). What makes the period of elaboration particularly important is the fact that philosophers of that period (such as William of Ockham (1285-1347), John Buridan, and Petrus Ramus (1515-1572)) were studying the already existing problems more in-depth instead of finding new problems, so that the main topics of the middle ages were made clear. In other words, in the period of elaboration, according to Bocheński, the problems that were already known were studied very carefully (Bocheński 149). Finding out and defining new problems is a great process, even by itself, because once you suggest a new problem, it opens new ways for knowledge as there will also be possible solutions; however, analyzing each part of an already existing problem is also an important one. In a similar fashion, Bocheński claims that the studies done in the third period of medieval logic provided "...an extremely comprehensive logic and semiotic" (Bocheński 149). This means that, in the period of elaboration, logicians studied the problems to a great extent and more thoroughly. However, it is still important to keep in mind that, even while asserting that it was the least productive one concerning the coining of new terms, Bocheński

still claims that "...scholastic logic, even by the end of the 13th century is very rich, very formalistic and exact in its statement" (Bocheński 152).

Regardless of which periodization we use, it can be seen as reasonable to mark the beginning of medieval logic with Boethius because his translations of and commentaries on both Porphyry's *Isagoge* and Aristotle's *Organon* were particularly influential on logica vetus.

Aristotle's *Organon* consists of six books; *Categories*, *On Interpretation*, *Prior Analytics*, *Posterior Analytics*, *Topics*, and *On Sophistical Refutations* (*Sophistical Elenchi*). Boethius is known to have translated all of them except *Posterior Analytics*. Still, even though Boethius had translated five of them, Kneales' claimed that the only translations that were available during the earlier times were *Categories* and *On Interpretation* and the other three were not easily accessible until later (Kneale and Kneale 189). It may be due to the fact that after Boethius's death, most of his translations were lost; moreover, Uckelman points out that except for *Categories* and *On Interpretation*, Boethius' other translations were not rediscovered until the 12th century (Uckelman 2). And according to Dod, "how and where those translations were found is unknown" (Dod 46). William of Sheerwood, a medieval logician, claims that "logic is principally concerned with the syllogism" (Sherwood 21). Even this description by itself shows that the main issues of the time were Aristotelian issues, and Boethius can be considered the reason behind this because of his translations that were previously mentioned in the second paragraph of this chapter. When we take a look at the titles of the significant logical works of the time, we see similar topics. In other words, for example, *terms*, investigation of linguistic terms like *nouns*, *verbs*, *propositions*, and *syllogisms* were popular topics of the books written during the middle ages and shared by many of the logical works of that time (such as, Peter of Spain's *Tractatus*, William of Ockham's *Summa Logicae*). This shows that the mainstream understanding of logic was closer to linguistics or the philosophy of language. Considering the fact that one of the most significant issues in medieval philosophy was the problem of universals, their focus on the language is understandable because the problem of universals is not only an ontological problem

regarding whether universals exist (or, if so, where do they exist?) but also a logical one that relates to our understanding of universal terms and how do we make sense of them in a language. From this point of view, it is not a matter of philosophical conduct necessitating logic as a helpful tool through which it ensures its justification. To consider this as a possibility is already problematic because to say that “philosophy makes use of logic in certain cases” is to assume that logic is only a method or a device that is used for argumentation or checking the soundness of an argument while it is not. Logic can be seen as *the* way of knowledge production, and since knowledge is the main object of philosophy, it does not seem right to split logic and philosophy and claim that logic is only a tool that is used by philosophy. Dealing with logic means dealing with knowledge and also producing new knowledge while doing so. And that is why there is a coincidence between logically rich periods and philosophically rich periods because both of them have knowledge at the center; therefore, growth in one also means growth in the other one.

2.2. Studies in Logic During the Medieval Times

In Middle Ages, there were logical studies both in the generally understood sense, i.e., logic as a formal tool, but also logic as a way of producing knowledge. This understanding is similar to the Sophistic view of logic. Thinkers such as Ramon Llull (1232-1315/16), Peter Abelard (1079-1142), or Petrus Ramus (1515-1572) treated logic as a rhetorical method and claimed that it is needed as a basis of argumentation. Ramus acknowledges logic for practical reasons. Ramus, known as a great critic of Aristotle, has an approach to philosophy that is similar to the Stoic approach (Kneale and Kneale 301). Since, according to Stoic understanding, logic and philosophy are not distinct disciplines, it fits better into Ramist education because Ramist education considers logic as a part of philosophy that shows the true knowledge of being. (Sellberg, chap.2.3 Definition of Philosophy). Moreover, in both Ramism and Stoicism, logic is a part of philosophy, and there is “one logic *or* dialectic” (Ashworth).

For these reasons, Ramist logic cannot be considered completely scholastic logic, yet we still need to consider it with its scholastic background because even though he is not an advocator of scholastic logic, he was still influenced by its doctrines (Sellberg, chap.3. Logic and method).

Ramus defines logic as *ars bene disserendi* (the art of correct examining or discussing) (Kneale and Kneale 302) and claims that students should employ logic to offer sound arguments that can be used in any discipline. Moreover, he claims rather than Aristotelian and Scholastic education Stoic education is much more appropriate for students. That is because in the Aristotelian approach, philosophy is a study of being, and since logic does not deal with beings, it is not a part of philosophical education (Sellberg, chap.2.3. Definition of Philosophy). Robert Kilwardby (1215-1279) takes Ramist understanding of logic to the next level, and he explicitly says that logic is a science it is because being a science requires reaching what is unknown through known. For Kilwardby, “science of logic regulates the methods of inquiry used in all sciences, including itself” (Thom 9). Moreover, logic is responsible for discovering new methods of knowing, and especially syllogism is the way to do that (it is because Kilwardby sees syllogism as the *central matter* of logic) (Thom 9). It is also important to note that Kilwardby posits that logic deals only with the actual world and cannot correspond to the concepts or propositions regarding the fictional worlds; in a way, it can be said that this approach might be seen as a supportive argument to his claims of logic being a science. Along with these views, he uses logic to secure his ideas concerning epistemology and knowing.

Employing logic as a method of argumentation was a popular idea back in the medieval ages. As it was mentioned earlier, their usage of logic and dialectics to refer to the same concept is even by itself can be considered as evidence of this fact. Also, mastering the ways of disputing would mean expressing themselves better so that they could spread their ideas to others and maybe persuade them. As a matter of fact, it was not only limited to argumentations concerning philosophical matters but also religious views. Similar to the Ramist approach and following the Scholastic religious tradition, Ramon Llull directed his philosophy in such a way that he aimed to convert people to

Christianity. With this intention in his mind, he developed a logical system called the *Ars* (the art). Logic enabled him to convince people of the Christian truth through debate and reasoning and not by using popular quotes and authorities (Giles 4). Because in this way, since it can be seen how he formed his arguments, his ideas would be available to anyone in a clear and distinct manner. And those whom he convinces will be convinced by asking their questions and getting answers so that there would be little to no doubt remaining in their minds concerning the Christian truth.

2.3. Topics in Medieval Logic

2.3.1. Signification

As was mentioned earlier, medieval logic mostly dealt with linguistic problems. Since they were working on linguistics, they put an emphasis on the properties of terms. According to William of Sheerwood, there are four properties of terms: *signification*, *supposition*, *appellation*, and *copulation* (qtd. in Bocheński 163).

It was thought that signification was basically the relationship between the term and the mind. Lambert of Lagny (1250) defined the signification of a word as “the concept of a thing, a concept on which an utterance is imposed by the will of the person instituting the term”(Lagny 104). In that sense, we can say that signification is responsible for what occurs in the mind when a particular word is being said. However, it is not limited to mental states or concepts because signification is also about the real object that the word refers to. For example, according to Boethius, a word essentially signifies a thought in mind, and secondly, it signifies what object it corresponds to (van der Lecq 360). This means that even though signification is essentially related to the mind of the hearer and the utterer (or the perceiver of the word), it is not only about the concepts that it is referring to, but it could also be about the corporeal things. For instance, when someone says “computer,” it first signifies the concept of a computer

in the utterer's mind. However, it secondarily signifies the computer itself as an object. The issue of whether words signify concepts in mind or objects in themselves were not as easily settled as I have just stated. Even Boethius, later on, denied the idea of words signifying objects; rather, he claimed that they only signify their concepts (Read, "Concepts and Meaning in Medieval Philosophy" 15).

2.3.2. Categorematic and Syncategorematic Terms

Studies about signification also lead the way to one of the most fundamental distinctions made in medieval times that we still use: *categorematic* and *syncategorematic terms*. Buridan wrote in the 1350s and quoted by Read: "Categorematic words ... signify things by the mediation of their concepts, according to which concepts, or similar ones, they were imposed to signify. So we call the things conceived by those concepts 'ultimate significata' ... but the concepts we call 'immediate significata'" (Read, "Concepts and Meaning in Medieval Philosophy" 10). So, it can be said that the categorematic terms have their significations by themselves (they do not need anything else to be a signifier). For instance, proper names or verbs are categorematic terms as they have meanings by themselves. On the other hand, *syncategorematic terms* neither signify an object nor have a meaning by themselves. They also cannot be a predicate or a subject of a sentence (Rivero 151). However, they gain their meaning by being in a sentence. In other words, syncategorematic terms gain signification only when they are parts of complete sentences (Uckelman 4). For example, logical connectives are examples of syncategorematic terms. And since syncategorematic terms are used with categorematic ones, Boehner used the verb "cosignifying" to refer to what they do in a sentence (qtd. in Rivero 137)⁴. Even though

⁴ Similar to Boehner, Paul Vincent Spade also uses the term cosignifying, see Patrick Spade (2009). *Sophismata*. In R. Pasnau (Author), *The Cambridge History of Medieval Philosophy* (pp. 185-195). Cambridge: Cambridge University Press. doi:10.1017/CHOL9780521762168.016.

syncategorematic terms do not have meanings, it does not mean that they are unimportant. Kneale's claims that they are of particular importance to logic since they signal the forms of sentences (Kneale and Kneale 233). Moreover, studies concerning the distinction between categorematic and syncategorematic terms are also important when it comes to dealing with ambiguities. Possible different readings of a syncategoremata would cause differences in meaning which would result in ambiguity. Confusing categorematic terms with syncategorematic ones could cause problems. Especially, different interpretations of the same syncategorematic term would lead to semantic puzzles, which are lying at the center of another one of the main concerns of the middle age: *sophismata*.

2.3.3. Sophismata And Insolubilia

When it comes to the matter of sophismata (singular *sophisma*) and insolubilia (singular *insolubli*), Uckelman mentions how it is important to win an argument by realizing the opponents' wrong reasonings, and that is why logicians studied insolubilia and sophismata (Uckelman 9). Sophisms are, simply put, a sequence of arguments that contain puzzling (or problematic) sentences that could be interpreted in more than one way. The particular importance of mastering sophisms comes from this because during a debate, if one of the debaters uses a sophism, the opposite side can make use of its possibility of being interpreted differently to win the debate. Sophisms were also examined in Aristotle's *On Sophistical Refutations*. There Aristotle investigates fallacies to a great extent and offers solutions to them (Bocheński 54–55; Yrjönsuuri 579).

Yrjönsuuri and Coppock treat insolubilia as a subcategory of sophismata and claim that insolubilia are rather difficult ones to be solved because they contain, for example,

paradoxes of self-reference (Yrjönsuuri and Coppock 266)⁵. Besides containing two different interpretations (that contradict each other), a sophism can also itself be contradictory. Following Yrjönsuuri's and Coppock's approach, it seems to be better to treat insolubilia as a subset of sophisms. What distinguishes insolubilia from other kinds of sophismata is the fact that insolubilia are *semantic puzzles*. The “*liar paradox*” is an example of an insolubilia. It is a self-referential, problematic sentence. Paradoxes caused by self-referential sentences are a topic not only studied in the middle ages but until very modern times. When it comes to sophismata caused by mistaking a syncategorematic term for a categorematic term (or vice versa), the most popular example would be “*infinita est finita*. For this example, Uckelman offers two readings of *infinita* of that sentence in English: “the infinite is finite” for categorematic reading and “infinite are the finite” for syncategorematic reading (Uckelman 13–14). While the syncategorematic reading is problem-free because it is not a meaningless statement to assert that there are infinitely many numbers of finite things, the categorematic reading, on the other hand, leads to a paradoxical sentence because it cannot be the case that infinite is ‘the finite.’ And this is an example of a sophism that is occurred due to confusing a categorematic term to be a syncategorematic term (or vice versa).

2.3.4. Supposition

Bocheński claims that *supposition* is the most original contribution of Medieval logicians to logic (Bocheński 162). He also asserts William of Sheerwood's definition of supposition. Sheerwood claims that supposition is the ordering of one concept over another (qtd. in Bocheński 163). This means that supposition functions similarly to what we today call the “reference” of a term. Parsons claims that supposition is the

⁵ On the other hand, Uckelman considers them to be the same, yet still gives an explanation of their difference and how they are deeper than paradoxes of our time (Uckelman 9).

relationship between a word and the propositions that include that word (Parsons 187). There are three main types of supposition: *material*, *simple*, and *personal supposition*. A term supposes materially when it refers to the word itself. For example, there is material supposition in “tea is a three-letter word” since ‘tea’ designates the word ‘tea.’ Therefore, we can conclude that when a sentence is built in a linguistic sense, there is a material supposition. Parsons explains why material supposition was needed in middle age. Today, when a specific word is being mentioned, we use quotation marks (or inverted commas) to highlight this usage. However, it wasn’t the case back in the middle age, and that is why material supposition was needed (Parsons 194–95). When it comes to simple supposition, it occurs when the term refers to the extension or concept of itself. Continuing with the example of tea, “tea is often drunk hot,” here ‘tea’ does not refer to the word itself or a specific tea; rather, it refers to the concept of tea. Personal supposition, on the other hand, occurs when the term refers to an individual. For example, in “tea is getting cold,” there is a specific tea; it is neither the word ‘tea’ nor the concept of tea. Uckelman claims that this kind of supposition is the most important type of supposition since it enables us to talk about individuals (Uckelman 4). The importance comes from the fact that, in everyday life, to be able to refer to specific objects or persons is highly needed for the convenience of speech, and that is what personal supposition offers us.

2.3.5. Problem of Universals

Even though it is not necessarily limited to be a logical concern, the problem of universals still plays an important role in medieval logic, and it is worth to be talked about. Because dealing with universals has an extent that reaches our use of language and, therefore, logic. Especially for those who claim that universals are only a part of language and they have no existence other than in language. William of Ockham (1287-1347) studied language for the sake of his other philosophical concerns; in other words, he studied language to offer better explanations for his philosophical views.

For example, he is an example of those who have studied the problem of universals and logic together. For he dealt with the universals problem, he used “grammar to establish his account of knowledge” (Tornay 251). This can be interpreted as Ockham placed logic at the center of his account. Being an avid follower of Aristotle’s logic, he claimed that the fact that everything is particular could be demonstrated through the correct analysis of language (Read, “William of Ockham’s the Sum of Logic” 271). He believes that there is nothing common in objects, even though we treat them as if they were the members of the same concept. The only thing that they share with each other is a relation, which is created only in the language, i.e., the universals do not have an existence outside the language. Ockham also claims that words that express privations, like “blindness,” are again only about the way words signify, and, for example, it is not something that a blind person has. Therefore, words, if not used and read carefully, can mislead people. They are, similar to the universals, not something ‘out there’ in the world, but they exist only in the language (Read, “William of Ockham’s the Sum of Logic” 272). This is another example showing how logic and philosophy move together.

Depending on the attitude one holds concerning universals, they can be named *realists* (i.e., Boethius, Saint Anselm), *conceptualists* (i.e., Peter Abelard), and *nominalists* (i.e., William of Ockham). Klima claims that those who believe that universals are prior to particulars are realists, while a conceptualist would argue that universals are only mental concepts. And lastly, a nominalist would deny universals being objects in the real world or conceptions of mind but rather claim that universals are only words (universal words) (Klima, chap.Introduction). Abelard can be considered to be a follower of Aristotle. Being a conceptualist, he does not deny that universals exist, but they are not separable in physical particulars, but only in the mind that one can make a distinction between a particular and a universal which that particular falls under. Paul Spade, on the other hand, gives an account of Boethius’s approach to universals as a realist. For Boethius, a universal must be;

- 1) “common” as a whole to the various things it is said to be common to,
- 2) it has to be “common” as a whole at the same time to those things, and lastly,

- 3) it has to be “common” to those things as a whole and at the same time in some appropriate metaphysically constitutive way (Spade 3).

This is how Boethius accounts for the real existence of universals. And William of Ockham is a nominalist who claimed that only individuals exist. He expresses his nominalism through the study of the properties of terms in his *Summa Logicae* (“Sum of Logic”) (circa 1323). For Ockham, words are the only universals, and they exist in the mind as objects of thought, and this is called *fictum theory* (Read, “William of Ockham’s the Sum of Logic” 272). For Ockham, universals are not entities existing in the world, neither separately nor together with a particular. Universals are only the results of mental processes.

CHAPTER 3

HOBBS'S BIOGRAPHY

3.1. Early Years (1588-1608)

Thomas Hobbes was born in Malmesbury, England, on April 5th, 1588. The day was also the Good Friday, a Christian holiday that is celebrated on the Friday before Easter. He was named after his father, Thomas Hobbes. Little is known about his mother; it is claimed that her family was a yeoman, yet there is no evidence to prove this claim (Martinich, *Hobbes: A Biography* 2). There are two speculations considering her name; Martinich claims that since Hobbes's sister is named Anne, their mother is also named Anne. Still, her name could also be "Alice," as Martinich posits Arnold Rogow's mention of the marriage record between Thomas Hobbes and Alice Courtnell on May 3rd, 1578, in the vicinity of Malmesbury (Martinich, *Hobbes: A Biography* 2). His father was a clergyman, a vicar of Westport (a village in the west of Malmesbury). He was notorious for his bad behaviors, especially for his fight with another clergyman Richard Jeane. In 1603 Jeane had arranged a court hearing for the father Hobbes because of his verbal offenses directed at Jeane, and also, he had announced Hobbes to be excommunicated. The court ordered Hobbes to do public penance. Then, Hobbes attacked Jeane in the churchyard. After this event, the father Hobbes left Malmesbury, and there has been no other record of him since then. Though one interesting thing to be mentioned about him is the fact that he attended the university when he was forty years old, it was unusual for a man of that age to go to university. Martinich claims that there might be two reasons behind that; one of them is that it might be because of Elizabeth I's aim of educating the clergy, and the other one is that maybe he was not a student but employed by the college (Martinich, *Hobbes: A Biography* 3).

Hobbes was the middle child; he had an older brother called Edmund (named after their uncle) and a younger sister called Anne, as mentioned earlier. When their father left in 1603, their other uncle Francis, an alderman who was also a glover, took care of them. Hobbes went to a school in Westport Church from the age of four to eight, where he learned reading, writing, and basic mathematics. Then he went to Malmesbury to study with Mr. Evans, but according to Martinich, Robert Latimer, who taught Hobbes after Mr. Evans, had the most impact on him (Martinich, *Hobbes: A Biography* 7). According to his autobiography, when Hobbes was fourteen years old, he went to Magdalen Hall, Oxford, where Latimer also got his bachelor of arts. Even back then, it was unusual for a university student to be this young. Hobbes's schoolmates were around sixteen and twenty years old. Considering this and the fact that there is no mention of a friend, it can be concluded that Hobbes was often alone in the university.

The date of his graduation is certain, 1608. However, when he began is not really clear because if it is as he says in his autobiography, he spent five years in Magdalen Hall, then it means he started his studies in 1603. Yet this is not in line with what he says, again, in his autobiography. There he claims, he was sent to Oxford when he was fourteen. Martinich claims the reason behind this could be the *plague* (Martinich, *Hobbes: A Biography* 9). Because for a student to graduate from a university, they needed to complete procedures that included *determination* and an exam on Aristotle. Determination is a kind of a debate held between the graduation candidate and two more senior students of the same college where the candidate defends an idea. Because of the plague, Hobbes might have taken a break of one year to complete his determination. And this explains how he first went to Oxford at the age of fourteen, spent five years there, and still got graduated in 1608. Furthermore, in England, a new year began on March 25th (also known as the *Lady Day*) between 1155 and 1752. So, if Hobbes graduated before the end of March, it could also explain the dates that he had given.

After getting his bachelor's degree, Hobbes was recommended to a noble family called *Cavendish* by the principal of Magdalen Hall. In 1608, Hobbes was hired by William Cavendish to tutor his son, who is also named William Cavendish, and spent most of his life working for the Cavendish family. William Cavendish bought the title of the Earl of Devonshire. King James, I was creating and selling nobility titles to make more money, and the earlship must have cost £10,000 to Cavendish (Martinich, *Hobbes: A Biography* 39–40). There were many Williams in the Cavendish family that had acquaintances with Hobbes. Still, the most important one is the one that is the second earl of Devonshire, so he is the one that I will be referring to when I mention “William.” Hobbes also tutored William's son, William Cavendish, the third earl of Devonshire. Another William Cavendish that is important for Hobbes is the cousin of William, the duke of Newcastle. The duke of Newcastle was in contact with Marin Mersenne (1588-1648), a French theologian. The duke also had a small group of scientists, which included Hobbes too.

There is a record that William Cavendish got his MA degree from St. John's College, Cambridge, in 1608 (Martinich, *Hobbes: A Biography* 25). However, back in 1608, William was married to a girl named Christian, and it makes it harder to be sure if it was our William that got his MA because it was prohibited for students to get married. But since he was a son of an earl, there could have been an exception. Moreover, Hobbes was incorporated⁶ at Cambridge in the same year (Martinich, *Hobbes: A Biography* 25; Malcolm, “Thomas Hobbes (1588-1679), Philosopher” 386). Considering the fact that Hobbes was already tutoring William in 1608, it makes sense to claim that our William Cavendish is the one that is on the record.

⁶ *Incorporation* is to give a degree to a person who has graduated from another university or college.

3.2. Trips to The Continent

Any rich, young Englishmen would travel to Europe; it was almost like a tradition. Hobbes, thanks to his relations, attended three of those travels. The first one was with William, then with Gervase Clifton (the second baronet Clifton of Clifton), and lastly with the son of William, another William Cavendish (the third earl of Devonshire). It is said that Hobbes went on the first tour in 1610 (Martinich, *Hobbes: A Biography* 29); however, there is evidence that Hobbes was still in England with William until 1614. It is not for sure whether they took little trips back and forth to England or not, but it is for sure that they were in Venice in 1614. In Venice, they met Fulgenzio Micanzio (1570-1654), a Venetian theologian who was also Paolo Sarpi's⁷ secretary. Micanzio and William had correspondence for years after this meeting. Micanzio's letters were mainly aimed to influence William to persuade the king to help Venice against the Roman Catholics. But he failed to reach his goals.

While working for the Cavendish family, Hobbes also worked for Francis Bacon (1561-1626) as his secretary and amanuensis. Their contact might be initiated by Micanzio. Evidence shows that, although Hobbes was working for Bacon, they were not always together. For example, in 1622, Hobbes got one share in the Virginia Company given by William (Martinich, *Hobbes: A Biography* 61), and Malcolm says that he attended meetings about the Company between 1622 and 1624 (Malcolm, "A Summary Biography of Hobbes" 20). Moreover, when Bacon talks about Hobbes, he uses the phrase "*whilst he was there,*" meaning that Hobbes was not always present to him (Bunce 49). Even though none of them mentions each other's names in detail, one can claim that Bacon had some impact on Hobbes's views. One of them is mentioned by Martinich; Bacon gives a short explanation that focuses on the importance of the definitions of words in *The Advancement of Learning* (1605), in *Leviathan* Hobbes offers a similar approach which praises the examination of definitions for preventing absurdities (Martinich, *Hobbes: A Biography* 67). John Aubrey (1626-1697), in his *Brief Lives* (which consists of biographies Aubrey wrote between 1669-1696), reports

⁷ Paolo Sarpi (1552-1623) was an Italian theologian and a statesman.

that Hobbes told him that Bacon's death was caused by an illness which he got caught while experimenting (Aubrey, chap. Francis Bacon: Viscount St. Albans). Since Hobbes witnessed Bacon's death, this means that he was still in contact with him until 1626 or at least in 1626. This event might have affected Hobbes's overall approach to experimenting, as Martinich also supposes that it might have caused Hobbes to think that besides being useless, experiments could also be dangerous (Martinich, *Hobbes: A Biography* 66).

In February 1626, the first earl of Devonshire died, and William became the second earl of Devonshire. In August of the same year, William, Hobbes, and the duke of Newcastle went on an excursion along with some other men around Chatsworth. Hobbes wrote a poem on the memory of the excursion, *De Mirabilibus Pecci* (1636), where he talks about the *seven wonders* they came across during the trip. First, it was published in Latin in 1636, and in 1678, its English translation was published by the name *the Seven Wonders of the Peak*.

Hobbes translated Thucydides's *History of the Peloponnesian War* in 1629. Even though Hobbes liked Thucydides's views regarding monarchy, he liked the fact that this work was a translation, but not an original work by himself where he posited his ideas. In that way, if people favor the book, he could get credit, but even if they do not, he will not take any blame as it would not be his views that the public objected to but Thucydides's.

On June 20th, 1628, William died and left all of his debt to his wife, Christian. There are different views about why Hobbes left the Cavendish house for two years and went to work for another wealthy English man, Sir Gervase Clifton, after William's death. One of these views suggests that Hobbes was no more needed in the house since William was dead and kids were still too young to be tutored (Tuck, *Hobbes* 11). According to another view, it would be better for Christian to have one less person to hire in order to cure the financial problems that were left to her after the death of William. However, Martinich suggests that it wasn't the case because Christian hired another tutor for her children after Hobbes left (Martinich, *Hobbes: A Biography* 82).

Regardless, the duke of Newcastle recommended Hobbes to Clifton, and he hired him to tutor his son, another Gervase Clifton (Malcolm, “A Summary Biography of Hobbes” 20–21). As was mentioned earlier, Hobbes traveled to the Continent with Gervase, too. They went to Paris, Lyons, and Geneva. They wanted to visit Italy, too, but they abandoned this plan because of the Thirty Years' War and Hobbes's fear of catching the plague (Martinich, *Hobbes: A Biography* 84–85). As it was Hobbes's second trip and since he was way older than Clifton, Hobbes did not spend much time with him; instead, he focused more on his work and possible scientific meetings. Besides politics and humanity, Hobbes was interested in science, too. According to Aubrey, Hobbes's amazement of geometry goes back to this trip where he saw Euclid's *Elements* (300 BC) open in a gentlemen's library (Aubrey, chap. Thomas Hobbes, “His mathematical studies”). As Martinich claims, Hobbes must have been acquainted with geometry back in school; however, this encounter might have been more impressive for his later works (Martinich, *Hobbes: A Biography* 85). Soon after, more exactly in 1630, Hobbes was back at the Cavendish house, tutoring William's son, William, the third earl of Devonshire. And they went on to Hobbes's third, William's first tour of Europe between 1634-1636 (Martinich, *Hobbes: A Biography* 89). This was the trip where Hobbes made probably the most important contacts. The trip coincides with Galileo Galilei's (1564-1642) home arrest in Florence. It is assumed that Hobbes visited Galileo there (Martinich, *Hobbes: A Biography* 90–91). And he had such an admiration for Galileo that, as Daniel Gerber quotes, he says that Galileo “is not the greatest [natural] philosopher of our time, but of all time” (Garber 107). He also met Marin Mersenne, who had relations with René Descartes (1596-1650) and Pierre Gassendi (1592-1655). Hobbes esteemed Mersenne to such a degree that in his autobiography, he says Mersenne was the center of the orbit around which every star (of the world of science) revolved (Hobbes, *The Life of Mr. Thomas Hobbes of Malmesbury Written by Himself in a Latine Poem, and Now Translated into English* (1680) 8).

Hobbes went back to England in 1636. But for the sake of scientific purposes, he wanted to stay in Welbeck with the duke of Newcastle as he had a small circle of scientists. After a year or two, he was finally spending most of his time in Welbeck.

And his first scientific study *Latin Optical Manuscript* was written in 1640 (Malcolm, “A Summary Biography of Hobbes” 25). It is probably also known as *Tractatus opticus I* because many sources claim that Hobbes has an untitled manuscript on optics dated back to 1640 (Tuck, “Optics and Sceptics: The Philosophical Foundations of Hobbes’s Political Thought” 250; Giudice 150; Prins 129). Malcolm and Martinich assert that it was mainly a critique of Descartes’s *Dioptrique* (1637) (Malcolm, “A Summary Biography of Hobbes” 25; Martinich, *Hobbes: A Biography* 163). Hobbes and Descartes kept their communication through the letters that they sent to Mersenne. But those letters were often full of critiques of each other’s views. Hobbes’s criticisms that he highlighted in his letters to Mersenne regarding Descartes’s *Meditations* (1641) were published in the book together with Descartes’s replies (Malcolm, “A Summary Biography of Hobbes” 28).

1640 was a rich year in terms of events; the plague was on the rise again. Hobbes spent forty days in isolation because he had met a man with plague (Martinich, *Hobbes: A Biography* 163). Another important thing that happened in 1640 was Hobbes’s nomination for the House of Commons by the third earl of Devonshire. However, he didn’t get accepted, and Martinich claims that it could be because Hobbes was “fairly controversial” (Martinich, *Hobbes: A Biography* 121). And as Martinich claims, after this election, Hobbes never engaged in politics again (Martinich, *Hobbes: A Biography* 121). But most importantly, *The Elements of Law, Natural, and Politics* was published in 1640, the book which would later in the same year cause Hobbes to run away from his motherland. Because parliament disagreed with his views advocating the absolute monarchy, and he did not want to risk getting into trouble because of his ideas (Malcolm, “A Summary Biography of Hobbes” 28). After the beginning of the new parliament in the early days of November, charges against those people who were in favor of the king increased. As Hobbes was also in favor of absolute monarchy and sovereignty, he was scared that he would be accused of his views, too. Thinking that he could be the next one to be blamed, Hobbes left England for Paris by the end of November, even without waiting for his luggage to be prepared (Martinich, *Hobbes: A Biography* 162).

Hobbes finally published *De Cive* (“*On the Citizen*”) in 1642. Even though the book was printed in a very small number, it still managed to make Hobbes famous. There was a big request for the translation of the book after its second edition in 1647, which was printed much more than the first one. One of the reasons why it was well-received was that while it was defending absolute sovereignty, the book was also not throwing a shade on the independence of the church (Martinich, *Hobbes: A Biography* 205). The English translation of *De Cive* was reprinted in 1651 by the name *Philosophical Rudiments Concerning Government and Society*. Martinich claims even though some suppose that Hobbes translated this book, it wasn’t really possible as he must have been working on *Leviathan* in those years. Moreover, Martinich also claims that there are differences between the styles of *Leviathan* and *De Cive*, and it would not be the case if they were to be written at the same time⁸ (Martinich, *Hobbes: A Biography* 180). In 1646 Hobbes started working as a mathematics instructor to the prince of Wales and the future King Charles II in Saint Germain, and he spent two years there (Collins 306–07; Martinich, *Thomas Hobbes* 12).

King Charles stood a trial in 1649, and he was indicted for using the country’s resources for his own benefit by the parliament. He was beheaded on January 30th, 1649. After his execution, the monarchy left England, and then it was a republic ruled by Oliver Cromwell (1599-1658), the Lord Protector. There were three parliaments during Cromwell’s reign: *Rump Parliament* (1651-1653), *Barebone’s Parliament* (1653), and the *Protectorate* (1653-1659). Following Cromwell’s death in 1658, his son became the Lord Protector. However, he had neither prestige nor experience in the parliament, and he was forced to resign in the following year; and this event ended the Protectorate. On the other hand, Scots proclaimed Charles II as a king right after Charles I’s execution.

⁸ Martinich also refers to a correspondence between Hobbes and Robert Payne (1596-1651), an English philosopher and a friend of Hobbes, according to which Payne offered Hobbes to translate *De Cive* and Hobbes responded saying that he was already occupied with another work, *Leviathan* (Sommerville 23; Martinich, *Hobbes: A Biography* 180; Malcolm, “Asp. Hobbes” 23).

3.3. Leviathan and De Corpore

After Charles's execution, Hobbes wanted to turn back to England, but he didn't feel like the time was right as there was no stability in England, especially between the Parliament and its army around 1649-1650 (Martinich, *Hobbes: A Biography* 209). However, he was also scared to stay in Paris because he thought that the French Roman Church would punish him because of his views. In April 1651, maybe the most popular work of Hobbes, *Leviathan*, was published. *Leviathan* is made up of propositions and proofs, and Hobbes employed the analytical method (Springborg 349). This book could be one of the reasons why Hobbes turned back to England no later than the early months of 1652 because, in the book, Hobbes criticizes Roman Catholicism so much that he claims that it is one of the two great dangers to true religion (Martinich, *Hobbes: A Biography* 214). Besides, in 1657 *Leviathan* was declared to be an atheistical work and reported to the parliament (Sommerville 25). Even though there is no evidence that anything had happened, it shows that Hobbes's fears were not in vain. So, his fears of the French Roman Church were even more strengthened, and Hobbes was back to England -more specifically to London, in February 1652.

In the 1650's Hobbes worked not only in politics and philosophy but also in geometry too. In 1655 he published *De Corpore* ("On the Body"). *De Corpore* is the second book in his trilogy: *The Elements of Philosophy* (the first book of this trilogy is *De Cive*, and *De Homine* is the third). Actually, he started working on this book in 1636 (Malcolm, "The Printing and Editing of Hobbes's 'De Corpore': A Review Of Karl Schuhmann's Edition" 329). In *De Corpore*, Hobbes claimed that he *squared the circle* along with some other geometric proofs (Martinich, *Hobbes: A Biography* 278). Hobbes had many public debates with other mathematicians before, and John Wallis (1616-1703) was one of them. Wallis rejected Hobbes's claim of squaring the circle, and in 1655, he published a book named *Elenchus Geometriae Hobbianaes*, where he criticized mathematical aspects of *De Corpore* (Malcolm, "The Printing and Editing

of Hobbes's 'De Corpore': A Review Of Karl Schuhmanns's Edition" 332). Hobbes replied to him in the English translation of *De Corpore* and named the chapter *Six Lessons to the Professors of Mathematics* (1656), and he also criticized Wallis in the *Stigmai, or Marks of the Absurd Geometry, Rural Language, Scottish Church Politics, and Barbarisms of John Wallis* (1657), by commenting on his views and explaining why they are false. He even goes so far that Hobbes claims Wallis confuses what he reads, and if it were to be found out by the school where Wallis teaches, he would be in danger of getting fired (Hobbes, *Stigmai, or Marks of the Absurd Geometry, Rural Language, Scottish Church Politics, and Barbarisms of John Wallis* 10–11)

The second edition of *De Corpore* in Latin is published thirteen years later, as a part of Hobbes's *Opera Philosophica* (1668), together with a Latin translation of *Leviathan* (Malcolm, "The Printing and Editing of Hobbes's 'De Corpore': A Review Of Karl Schuhmanns's Edition" 333). In 1658, Hobbes completed his trilogy *The Elements of Philosophy* by publishing *De Homine* ("On Man").

3.4. The Royal Society

After the end of the Protectorate in 1659, the English Parliament invited Charles back to England as the king. And in 1660, Charles II was back on his throne again. The years where Charles was reigning are called "the Stuart Restoration." And in 1661, the new parliament was founded; it was called "the Cavalier Parliament." It was a very oppressive parliament in terms of religious issues. Between 1661 and 1665, they issued a bill named the "Clarendon Code," which was made up of four different acts, each of which included different religious rules. The acts are namely; *The Corporation Act* (1661), *The Act of Uniformity* (1662), *The Conventicle Act* (1664), and *The Five Mile Act* (1665). According to The Corporation Act, all officials that are working in the municipalities should be followers of the Church of England, and The Act of Uniformity is the application of the former act to the clergyman. The Conventicle Act

forbade more than four people to worship together unless they were Anglicans. The Five Mile Act, on the other hand, made it illegal for priests that are not conforming those acts to come more than five miles to the town in which they served (Martinich, *Hobbes: A Biography* 296). These are certainly oppressive rules. And according to Gordon Hull, Hobbes felt really threatened by these acts, and he burned some of his writings so that he wasn't risking the burning himself (Hull 16).

The Royal Society's foundation is also in the first years of Charles II's reign. John Wallis, Robert Boyle (1627-1691), Kenelm Digby (1603-1665), and Seth Ward (1617-1689) were among the members of the society. Even though he wanted to be, Hobbes never got to be a member of the Society. One of the reasons behind that is the fact that the Royal Society takes experimentalism as the basis of scientific knowledge. In other words, the Society wanted to use experiments as a way to reach the knowledge of natural things (Hooke qtd. in Martinich, *Hobbes: A Biography* 297). In contrast, Hobbes looks down on experiments as a way of producing scientific knowledge. What Hobbes prefers as a method is observation; he claims that observation in itself is enough to understand nature. Another possible reason why Hobbes was not accepted as a member, as Martinich claims, is that he was *boring* to be in the Society (Martinich, *Hobbes: A Biography* 301). Skinner also posits Hobbes's religious views could be the reason why the Society was against his admission. For most of the members, religion was a motive behind their scientific work and a part of their character (Skinner 223). In this sense, it is possible that Hobbes's alleged atheism and other views were not in line with the general stance of the Society. Martinich, on the other hand, asserts that some of the members had similar views to Hobbes, such as Joseph Glanvill's claim that sensations are caused by motion (Martinich, *Hobbes: A Biography* 299). As Hobbes was thought to be an atheist, the other scientists were afraid of being associated with Hobbes's views, even if those views were not religious. In a way, it was embarrassing for others to be in close connection to Hobbes's position (Malcolm, "Asp. Hobbes" 328).

Another difference between Hobbes and the members of the society was their approach to definitions. Hobbes was defending that stipulative definitions should be

the basis upon which science was to be established. However, John Wallis took this approach to be unprofessional and claimed that Hobbes would redefine anything for the sake of winning an argument (Martinich, *Hobbes: A Biography* 298). In 1661, Hobbes published *Dialogus Physicus*, in which he criticized the method of the Society, which is experimentalism, and especially Robert Boyle's, for Boyle was also in favor of experimental science (Skinner 221). Hobbes claims that experiments that the Society had conducted were nothing but a loss of time and money (Martinich, *Hobbes: A Biography* 298). Boyle was hesitant about Hobbes simply because he was afraid that Hobbes's approach would affect others; however, Skinner points out that it is not appropriate to say that Boyle didn't want him in the Society because of his approach to experimentalism (Skinner 228). Because he believes that to claim that Hobbes was seen as a hostile figure to the Society just because he and Boyle didn't agree about experimentalism does not reflect the reality. Hobbes had many arguments concerning his views with the prominent names of his time, many of whom were also members of the Society, such as Boyle, Wallis, Seth Ward, and John Wilkins (Martinich, *Hobbes: A Biography* 297), and his disagreements with the members of the society may be yet another reason why he never got accepted into the Society. Also, some of the fellows, such as Hooke, wanted the society to be "a closed and elitist group" (Martinich, *Hobbes: A Biography* 303). Martinich also quotes John Owen, a member of the Society, "Whatever be Hobbes's doctrine, we will not accept it" (Martinich, *Hobbes: A Biography* 302). Even though this view does not necessarily mean that every member was hostile to Hobbes, so far, we can see that this was the general attitude, and it can be concluded from this that one of the reasons why Hobbes never got to be a member of the Society can be his relationships with the members.

In October 1666, there was a bill about *atheism*, *heresy*, and *profanity*, according to which Hobbes's works were to be investigated by a *Commons Committee* (Parkin, "Taming the Leviathan: Reading Hobbes in Seventeenth-Century Europe" 41; Martinich, *Hobbes: A Biography* 320). Those charges led him to write about heresy; for example, he had written an appendix to the Latin verse of *Leviathan* (1668) about why people could not be blamed for heresy in the 1660s (Martinich, *Hobbes: A Biography* 320). But it must be noted that none of his writings concerning heresy were

published until those charges were dropped, but then this means that his writings cannot be the reason why he was never punished (Martinich, *Hobbes: A Biography* 322). However, it was thought that he was either protected by his friend Lord Arlington or his innocence was enough evidence by itself (Milton 503; Martinich, *Hobbes: A Biography* 322). The evidence that leads up to this view is caused by Hobbes's dedication of his *De Principiis et Ratiocinatione* (1666) to Arlington.

The Latin version of *Leviathan* was published in 1668, along with his other Latin works. It was published by a Dutch publisher because England de facto banned Hobbes from publishing books about human nature or civil concepts. He could only publish on topics of mathematics and science (Martinich, *Hobbes: A Biography* 325). Moreover, according to Parkin, in 1668, there was hearsay that said Bishops would not want *Leviathan* to be printed again (Parkin, "The Reception of Hobbes's *Leviathan*" 448). There was also a pamphlet in circulation back in 1652; it was called *A Beacon Set on Fire*. According to the pamphlet, Hobbes's *Leviathan* contained religiously unacceptable views (Fawne 14).

In 1670, Gottfried Leibniz (1646-1716) sent a letter to Hobbes in which he expressed his admiration of him, and four years later, another one (Ross 3). Along with his admiration, Leibniz also gave an account of his understanding of mechanistic philosophy in his letters (Malcolm, *The Correspondence, Vol.2: 1660-1679* 716–21). But there is no sign which shows if Hobbes replied to those letters or not. It is also possible that the second letter was never delivered to Hobbes because it was sent by Leibniz's patron Johann Christian von Boineburg, and the letter was referred to be a copy of the original letter to Hobbes. However, both the original and the copy survives together and Malcolm claims that it can be evidence that they never reached Hobbes (Malcolm, *The Correspondence, Vol.2: 1660-1679* 735). In the 1670s, Hobbes's health was getting worse, he was shaking, and in 1671 he even had paralysis. Aubrey asserts that his shaking got so bad that his writings were illegible, and when his amanuensis wasn't around, he would scribble little notes to remind himself about what he thought of writing (Aubrey, chap. Thomas Hobbes). But he still managed to keep on working. In 1673, he translated some parts of the *Odyssey* by the name of *The*

Travels of Ulysses. The reason why he only published the parts of it, according to Martinich, was to see the impact of it (Martinich, *Hobbes: A Biography* 339). Two years later, in 1675, he published the whole book. It was a success, just like his future translation of the *Iliad* (1676) will be (Martinich, *Hobbes: A Biography* 339).

Robert Hooke, a member of the Royal Society, was also a friend of John Aubrey. Aubrey claims that Hooke sent a letter to Aubrey in 1675 where he asks whether Hobbes had any philosophical or mathematical unpublished writings (Aubrey, chap. Thomas Hobbes). However, Hobbes must have held a grudge against the Society even to that day, and he said that he doesn't have any, but even if he did, he wouldn't send them to the Society (Skinner 218).

He was ninety when he published *Decameron Physiologicum* (1678), in which he lays out his understanding of physics and also critiques John Wallis (Martinich, *Hobbes: A Biography* 348–49). He was getting more and more ill as time went by. Towards the end of 1679, he had a problem with his bladder. Cavendish family was getting ready to move to Hardwick in the November of that year. As Hobbes was seriously ill, they wanted to leave him back at Chatsworth for not to put him in discomfort. However, Hobbes rejected this offer and insisted on going with them. A week later of their arrival at Hardwick, Hobbes had a stroke that paralyzed his right side (Martinich, *Hobbes: A Biography* 355). He died on December 4th, 1679. It is said that he wanted “this is the true philosopher's stone” to be engraved on his tombstone (Malcolm, “A Summary Biography of Hobbes” 38). But the inscription on his tombstone says something else. It is written in Latin, which in English means: “Here are buried the bones of Thomas Hobbes of Malmesbury, who for many years served two earls of Devonshire, father, and son. He was a virtuous man, and his reputation for erudition both at home and abroad is well known” (Martinich, *Hobbes: A Biography* 356).

CHAPTER 4

HOBBS'S NATURAL PHILOSOPHY

Thomas Hobbes lived in such a time that so many important things were going on, not only in philosophy but also in science and in politics, such as Scientific Revolution⁹ (1543-1687), the English Civil War (1642-1651), and the Thirty Years' War (1618-1648) which put a burden on his travel plans (Martinich, *Hobbes: A Biography* 84–85). Considering the world situation back when Hobbes was living, it might be the reason why he is usually remembered by his book *Leviathan* (1651). Even though he has been mostly regarded as a political philosopher, Hobbes had also written about logic and natural philosophy; for example, *De Corpore* (1650) starts with a chapter dedicated to logic. *De Corpore* is actually a part of his *Elements of Philosophy* (1656), which contains *De Cive* (1642) and *De Homine* (1658) alongside *De Corpore*. J. W. N. Watkins in his 1995 article claims that Hobbes's politics is preceded by his understanding of human nature and his understanding of human nature comes from his natural philosophy (Watkins 126). In other words, Hobbes's philosophy must be considered as a whole; and, it will be inadequate, for example, to study Hobbes's nominalism without acknowledging his views about materialism. This is an important point for Hobbes's philosophy. In *De Corpore*, he asserts that the order of the creation was “*light, distinction of day and night, the firmament, the luminaries, sensible creatures, man and the commandment*” and since philosophy is to offer explanations regarding the nature, the order of the philosophy must follow the same order in its ways and this order is “*reason, definition, space, the stars, sensible quality, man and subjection to command*”(Hobbes, *De Corpore*, chap. Author's Epistle to the Reader).

⁹ It is usually regarded that the Scientific Revolution is started with Nicolaus Copernicus' *De Revolutionibus orbium coelestium* (1543) and finished with Isaac Newton's *Philosophiae Naturalis Principia Mathematica* (1687).

When we take a look at his works, he almost always starts with natural philosophy, then goes on to explain human nature and then he finishes with civil philosophy.

Philosophy, for Hobbes, “is such knowledge of effects or appearances, as we acquire by true ratiocination from the knowledge, we have first of their cause or generation; and again, of such causes or generations as may be from knowing first their effects.” (Hobbes, *De Corpore* 3). As he explains in the following chapter of *De Corpore*, even though the knowledge we get through sense experience can still be considered a piece of knowledge, it is not philosophy since it is not attained through reasoning. In other words, philosophy focuses on the cause-and-effect relationship to understand the very nature of a thing that it studies. In a way, his philosophy is about the first causes.

The idea of the first causes goes back to Aristotle. Aristotle’s *Physics* (350 B.C.) starts with the claim that to have a knowledge of something is to have a knowledge of its first causes (Aristotle 184a 10). In a similar fashion, for Hobbes, if one does not know the first cause of an object, one cannot philosophize upon it because the knowledge of the first cause is attained through ratiocination, which is the only source of the philosophy. It is good to keep in mind that, what matters the most here is the way we *philosophize*. Of course, attaining the true causes is important; however, the method to reach those causes is crucial and Hobbes asserts that method to be *ratiocination*. Before moving further, we need to consider Hobbes’s approach here, because while being against to everything Aristotelian, why does Hobbes still use jargon of Aristotle? One answer could be that it is easier to show the problems in a system using its terms, and also prove to those who follow that system that it is faulty. Moreover, proposing a new system with using the former one’s jargon would be easier to understand and convince others. However, to understand the reasons behind why Hobbes employed an Aristotelian jargon is an issue that cannot be discussed here as a part of a larger work, it deserves its own study.

At the beginning of *De Corpore*, where he claims that he will set the foundations of philosophy, he defines philosophy as “it is the natural reason of man, busily flying up and down among the creatures, and bringing back a true report of their order, causes

and effects” (Hobbes, *De Corpore*, chap. The Author’s Epistle to the Reader, p.xiii). Especially when it comes to the first philosophy¹⁰, it is its task to find out about the universal concepts that are used in science and define them so that they would act as the principles of all the sciences (Zarka 64). Hobbes gives an example of a square to explain what is a universal thing in *De Corpore*. A square could be considered to be a totality of a plain, composed of four lines that are straight and equal in length. In this demonstration, line, composed, angle, straightness, equality, and plain are universals (Hobbes, *De Corpore* 69). This is an important point of Hobbes’s philosophy, for example, in this instance he gives the definition of a square in terms of the universals that make up a square. He claims that to have a definition of something, we first need to know the universals that bring about that thing and the causes behind it. That is how we get their definitions and definitions clear the way to the generations and the descriptions of the things. Therefore, the reason why Hobbes pays a special attention to the universals is because moving on from definitions we get to learn the generations of things, and that is the kind of knowledge that we need in science (Hobbes, *De Corpore* 70–71). Following this thought, Hobbes lists the topics that can be studied as subjects of philosophy such as the study of motion, physics, and civil and moral philosophy (Hobbes, *De Corpore* 72–73). In *De Corpore*, he claims that philosophy reaches the knowledge of the nature of bodies by looking at their generation and concludes that “...where there is no generation or property, there is no philosophy” (Hobbes, *De Corpore* 10). That is why he excludes theology - along with the study of angels, worship, and history- from the subjects of philosophy. Tom Sorell claims that the reason behind Hobbes’s rejection of theology as a philosophical topic lies in the problems that Hobbes had back then with the churchmen. According to Sorell, Hobbes wanted to cast doubt on the authority of religious officials and their intellectual domination (Sorell 46). However, Hobbes asserts that theology cannot be a subject of philosophy simply because one cannot talk about generation when it comes to God because, according to Hobbes, in God “there is nothing neither to divide nor

¹⁰ *First philosophy* is an Aristotelian term, referring to the *metaphysics*. However, Hobbes defines first philosophy as the philosophy that all other philosophy depends on, and it includes the definitions that are necessary in explaining the conceptions of the nature and generation of bodies (Hobbes, *Leviathan* 688).

compound, nor any generation to be conceived” (Hobbes, *De Corpore* 10). The *generation* Hobbes mentions here means to be “...capable of composition and resolution” (Hobbes, *De Corpore* 10). Therefore, to be able to talk about generation, the thing in question must be composite, so that one can examine the parts that come together and generate that thing. Because according to Hobbes, our conceptions are based on adding and subtracting ideas together and this is also what a generational knowledge consists in. Therefore, to know the generation of a thing one needs to know its resolute parts. Again, as there is no resolute parts of God, we cannot have that kind of knowledge about it.

Besides the lack of generational knowledge, God is also a part of the objects (*ens*) that are not imaginable, and that is another reason why the study of God cannot be considered as a science (Zarka 68). God is an unimaginable object because it does not “occupy space” and also there is no image whatsoever in the mind¹¹. This consideration implies that God cannot be neither the subject nor the object of the sciences. This is an important change in the method of philosophy because for the longest time God was regarded to be the subject of all inquiry, and everything else was just another object. However, grouping God together with the other objects (even though they are unimaginable, they are still objects) shows a great deal about not only Hobbes’s approach to the way of knowing but also the change taking place in epistemology during the 16th and 17th centuries. Now that God is considered to be another object, it becomes clear that the human rationality has become the only subject that every act which contains knowing stems from. This can also be interpreted as that human mind has become the center of philosophy and science.

Hobbes builds his ideas upon the philosophy of the first causes. To have an understanding of the first causes, again for Hobbes, one need to consider whatever is

¹¹ In *Anti-White* Hobbes gives an account for the differences between two kinds of objects (*ens*); imaginable and unimaginable. Imaginable objects are the ones that we can think of and that whatever occupies space, i.e. *any body at all*. On the other hand, unimaginable entia are the ones that we have no picture in the mind, for example God, angels, the good and the evil (Zarka 68).

given by their sense experience, because sense experience is the source for the knowledge of things. Moreover, since every sensible thing occurs in the space and time and we experience things and build ideas upon that ground, it is better to look at Hobbes's definitions of those two, so that it can be easier to comprehend his further views. Therefore, before moving on to the knowledge of the first causes, first we need to understand the framework on which we sense things. He deals with space and time in the 7th and 8th chapters of *De Corpore*. He describes space by using *phantasms*. Phantasms are basically images created through senses. Edward Slowik claims, that phantasm refers to, especially in *De Corpore*, "sensations or sense ideas" (Slowik 64). Hobbes defines space as "...the phantasm of a thing existed without the mind simply" (Hobbes, *De Corpore* 94). In that sense, unlike other phantasms that require mind, space is the only phantasm that can appear without the mind. Hobbes gives an example where everything is annihilated except a human. Only thing that person can think of would be his memories or phantasms of the world that he had once lived in, before everything went extinct. And those phantasms give the notion of space because they give the possibility of the world to be filled. Moreover, regardless of the properties of the things, he remembers the fact that they once existed and that is what gives the phantasm of the space. Even though in that current moment where that person exists, the world is empty, he still knows that it was once filled, and it can be filled again. In other words, his understanding of the space is not something already filled, but rather something that makes it possible for others to exist, or *take up space* (Hobbes, *De Corpore* 93). In that sense the phantasm of space, or the idea of a space in the perceiver's mind is which enables the possibility of a thing to be placed in. This is the Hobbes's understanding of the space, and also the reason why he calls his space as the *imaginary space*. In his words, "...a conception of that we call *space*, an imaginary space indeed, because a mere phantasm, yet that very thing which all men call so" (Hobbes, *De Corpore* 93). In this way, imaginary space is not an objective one because each person can have their own understanding of space depending on their sense experience, or their *phantasms*. Basically, imaginary space is a phantasm that we obtain through the phantasm of body. And again, while other phantasms require the mind, the phantasm of space does not. But since we do not directly experience space itself, we construct the phantasm of it by using other phantasms, namely, the

phantasm of body. There is also, as Hobbes calls it, the *real space*. The real space is basically the bodily magnitude and it does not depend on our cogitation (Hobbes, *De Corpore* 105). Therefore, the space that the body occupies is the real space. The magnitude of a body¹² causes the sense of the body in the perceiver and therefore it can be said that the real space is the source of the phantasm of the *thing*. Note that imaginary space was caused by the magnitude of a body; however, real space is the magnitude of a body. This description of real space may cause to readers to think that it is the same with the *place* that body takes. To avoid this, Hobbes explains the differences between the place and the real space. He asserts that the magnitude or the real space always remains the same, even though the place that magnitude occupies might change. But this does not mean that the place is movable, on the contrary, place is immovable while magnitude can move. Moreover, place is the phantasm of every body that takes up space, while magnitude is the *peculiar* accident of every body (Hobbes, *De Corpore* 105–06). Claiming that the body is the only substance, Hobbes asserts that space is an *accident*¹³ of the body not the *extension* of it (Hobbes, *De Corpore* 92). This can be interpreted as Hobbes using body as a rigid rod to construct space.

When it comes to time, Hobbes claims that time is also a phantasm of motion. Just like body in the mind leaves the phantasm of space, the motion of a body leaves the phantasm of *time* (Hobbes, *De Corpore* 94). Regarding the terms about time, such as days or years, Hobbes holds that they are the results of computations of our mind. He goes on to say that all the phenomena of nature arise from the motion and collision of material bodies. That is why he defines time in terms of motion. Therefore, time is an accident of motion, while space is an accident of the body. Zarka underlines that space

¹² Hobbes defines *body* as the “thing that does not depend upon our thought,” and “a thing subsisting of itself” (Hobbes, *De Corpore* 102). This can be interpreted as Hobbes claims that body is something that exists by itself, it does not need our mind.

¹³ *Accident*, according to Hobbes, is a property of a thing through which we understand the thing. In his words accident is the “manner of our conception of the body” (Hobbes, *De Corpore* 104). Accidents are not directly related to the essence of the bodies, in other words, a change in the accidents does not imply a change in the essence of the thing.

and time are not any different than the other phantasms in the sense that they, too, belong to the “form of our knowledge of existing and changing things,” this is because those phantasms come from the extension and motion of bodies (Zarka 67).

More to the objects of philosophy, Hobbes also asserts a distinction between entities. There are two kinds of them, the ones that we can imagine (a stone, a cup) and the ones we cannot imagine (God, spirit). Hobbes claims that philosophy should only deal with the imaginable ones (*ens imaginabile*). Following from this point of view, he also says that *ens* and body are the same.

Considering the way Hobbes defined philosophy as the study of the first causes, it is no surprise that he developed his philosophical foundations based on first causes. From this point of view, if there is no knowledge of generation then there is no knowledge of a property (which means we cannot talk about first causes), therefore, there is no possibility for a philosophical conduct. That is why he excluded theology and metaphysics from philosophy.

As it was mentioned earlier, generational knowledge is important for Hobbes, because that is how we understand the nature of the object in question. Considering the fact that geometry enables us to talk about the causes that lay in the essence of an object, it is almost like a beginning point of every science. That is why, on the similar line of thought, Hobbes puts special emphasis on geometry. He claims that geometry is the only science that God bestowed on humankind (Hobbes, *Leviathan* 105). Because in geometry, we are working with the objects whose generations that we know of. And he claims that similar to the first philosophy, also in geometry, conclusions can be drawn from known and true principles to their effects (while in the natural philosophy,¹⁴ we reach causes only from known effects) (Horstmann 487). In *De Corpore*, he gives an example of a circle to show how we get the knowledge of an effect by its generation. It is known how to draw a circle:

¹⁴ By natural philosophy, Hobbes refers to the study that takes natural bodies as its subject (Hobbes, *De Corpore* 11). Also, in this thesis, natural philosophy and science are used synonymously.

circumduction of a body whereof one end remained unmoved, and we may reason thus; a body carried about, retaining always the same length, applies itself first to one *radius*, then to another, to a third, a fourth, and successively to all; and therefore the same length, from the same point, touches the circumference in every part thereof; which is as much to say as all the *Radii* are equal.(Hobbes, *De Corpore* 6)

In other words, figure consisting of points of the same length with regard to one specific point, i.e., “a figure, from whose one middle point all the extreme points are reached unto by equal *radii*” (Hobbes, *De Corpore* 6). When one knows how to generate a circle, one also knows the characteristics of a circle. That is the method Hobbes offers as the method of the first philosophy. Hanson claims that Hobbes (together with Galileo and Descartes) considered geometry as “...*the* method of discovery, the heart of which was the process the ancient Greek mathematicians called ‘analysis’” (Hanson 587). However, it is crucial to keep in mind that, even though Hobbes claimed science should use the geometrical method, science first needs to establish *definitions*. Because in geometry, definitions are already settled; however, it is not so in any other science (Hobbes, *Leviathan* 105). Therefore, if science does not establish its basic definitions at first, it would be taking a priori definitions as foundations which would make science’s reliability problematic (Lyons 305).

In terms of the natural philosophy, the effects (or the results) of the natural phenomenon are known by observation (unlike the first philosophy, where the only method is ratiocination¹⁵). Hobbes claims in his *Decameron Physiologicum*, “there is no effect in nature which the Author of nature cannot bring to pass by more ways than one” (Hobbes, *Decameron Physiologicum in The English Works of Thomas Hobbes of Malmesbury, Volume 7* 88). This means that, we cannot know the exact causes behind events in nature, even though we offer some explanations, there is no way to be sure that it is the ultimate explanation of that cause as there can be many other effects that God made it possible that the very same cause to happen. And since the only medium

¹⁵ According to Hobbes, geometry and the first philosophy share the same method; moving from causes to their effects. Since we cannot observe the causes of them, we can only reason about their possible causes and that is why the first philosophy’s method is only ratiocination (Horstmann 487).

to learn about the nature is observation, it cannot be the case to observe every different way through which natural phenomenon occur. Simply put, we see that Hobbes does not claim that for the same effect, there can be only one cause. Therefore, to offer one explanation for one specific natural phenomenon does not imply that it is the absolute explanation of it. In a similar manner, J. H. Muirhead claims that the power that created the universe can change its ways, which would cause a change in the understanding of men and eventually that would lead the way to a change in the already established and accepted hypotheses (Muirhead 101). Even though whether Hobbes would call God the “power” is doubtful, Muirhead’s this view evokes Hobbes’s argument of there being more than many ways of the same phenomenon. What one needs to do, according to Hobbes, is to imitate the ways of God’s creation for the understanding of what is going on in nature and also for being a philosopher in *good earnest* (Hobbes, *De Corpore*, chap. Author’s Epistle to the Reader). This is where the method of hypothesis comes into play. According to Hobbes, a hypothesis is a supposition constructed to draw inferences from it for the purpose of explaining a phenomenon. Hobbes claims that hypotheses are required for natural philosophy. Because to understand the God’s creation, or the nature, at first there needs to be hypotheses so that one can draw conclusions according to their observations. Moreover, his emphasis on hypotheses also affected his division of sciences, therefore we need to look at the way how he divides the sciences, and once how Hobbes divides sciences is settled, it is easier to understand why hypotheses are important for natural philosophy. Hobbes gives a detailed explanation of the division sciences according to their objects in his *Six Lessons to the Professors of Mathematics* (1656).

There are demonstrable and indemonstrable sciences for Hobbes. Demonstrable sciences are the ones in which we can construct the object by ourselves. And in science, just like in philosophy, we are looking for the causes. Therefore, if we know the causes, we can demonstrate what is going on with that object. The only way we can do this is through by constructing the objects by ourselves. Drawing inferences about the causes of the known effects actually imply the analytic method. As it was mentioned earlier, he claims that geometry is one of those sciences since we define what line is or else (Hobbes, *Six Lessons to the Professors of the Mathematiques* 1).

On the other hand, we do not know about the construction of natural bodies. To conduct a scientific study on natural bodies, we deduce possible conclusions or causes. In other words, they are indemonstrable sciences, and in his letter to Earl of Newcastle, Hobbes asserts that indemonstrable sciences are the greatest part of natural philosophy (Malcolm, *The Clarendon Edition of the Works of Thomas Hobbes, Vol. 6: The Correspondence, Vol. 1: 1622–1659* 33). That is why Hobbes puts a special emphasis on hypotheses; indemonstrable sciences are the biggest part of the natural philosophy and he claims that we need hypotheses for indemonstrable sciences. As Horstmann claims, in natural philosophy, one phenomenon can be explained in different ways (Horstmann 489). And the reason why we need hypotheses for indemonstrable sciences is the fact that we cannot know the exact causes behind natural things; we can only observe their effects; that is why, we cannot be sure about our ideas concerning natural philosophy since there might be many other explanations; instead, we can offer possible causes, in other words; *hypotheses*. This suggestion of possible effects, based on a cause is similar to the method that is often called the *synthetic method*. In our case, the synthetic method means studying a cause and extrapolating the possible effects that cause might produce. In Hobbes's words, "...resolutive method is commonly called *analytical* method, as the compositive is called *synthetical*" (Hobbes, *De Corpore* 66).

In *Leviathan* Hobbes asserts another distinction between sciences depending on the kind of knowledge they take as their subjects. There are two kinds of knowledge; *knowledge of facts*, and *knowledge of the consequence of one affirmation to another* (Hobbes, *Leviathan* 147). While knowledge of fact is attained through our senses (and therefore also through memory), the second kind of knowledge occurs with a mental process of knowledge of fact. When we register the knowledge of fact, we get *history*. Both natural and civil history are the products of the registration of this kind of knowledge. Registration of the second kind of knowledge, on the other hand, includes *demonstrations*. Hobbes claims that being a philosopher requires the knowledge of the consequences. This thought is in line with his idea that the aim of philosophy is to reach knowledge of causes. In other words, a philosopher must deal with the consequences, analyze them and use them to reach knowledge of the causes. Different

kinds of consequences lead to different kinds of sciences. For example, mechanics study the consequences of motion, music studies the consequences of sound etc. (Hobbes, *Leviathan* 149).

In *Diologus Physicus* Hobbes first mentions that the insufficiency of the experiments and then he claims "...are there not enough, do you not think, shown by the high heavens and the seas and the broad Earth" (Hobbes, "Dialogus Physicus" 351). What Hobbes means here is that just by observing nature, we can have enough to produce knowledge. Hobbes is not against experiments; however, he also doesn't think they are necessary to conduct a scientific research. However, even if a scientist was to conduct an experiment, it was also essential for them to construct the right hypotheses. Because to experiment with a problematic hypothesis would not only mean to spend money and time for nothing, but also it could lead to wrong explanations of the nature. Regarding Hobbes's approach to hypotheses and experiments, Martinich claims that "a good scientist is one who devises the right sort of hypotheses to explain the experiments" (Martinich, *Thomas Hobbes* 91).

The reason Hobbes built his philosophy and science on the knowledge of causes lies in the fact that he holds a strict approach when it comes to the cause and effect relationship. Unlike Aristotle's four causes, Hobbes claims there are only two: *the efficient cause* and *the material cause*. Efficient cause is the requisite for the production of the effect and, the aggregate of accidents in the agent; while the material cause is the aggregate of accidents in the *patient* (Hobbes, *De Corpore*, chap.122). Despite the fact that each of these two causes seem crucial for an effect to be produced, Hobbes claims that they are only *parts* of the *entire cause*. Even his usage of the term "entire cause" signals his understanding of causality by itself (Hobbes, *De Corpore*, chap.122). He defines cause as:

...aggregate of all the accidents both of the agents how many soever they be, and of the patient, put together; which when they are all supposed to be present, it cannot be understood but that the effect is produced at the same instant; and if any one of them be wanting, it cannot be understood but that the effect is not produced (Hobbes, *De Corpore* 121–22)

The same cause will always produce the same effect, and whenever it is not the case, it means that something is missing. Namely, as Zarka claims, Hobbes shows that cause is necessary and sufficient for the effect, and taking his cue from that, he builds his idea of absolute necessity (Zarka 70). In that way, what he asserts is a strong *determinism*. In a deterministic system like that, one would think that there is no place for free will. However, it is not the case. Even though Hobbes asserts that there is no free will, he also claims that people are free in their basic actions (Martinich, *Thomas Hobbes* 108). Hugo Van den Enden calls Hobbes's standpoint "*actional liberty combined with volitional determinism*" (Van den Enden 187). With *actional liberty*, he means that there are voluntary actions; however, since volitional determinism claims that will is not free because external causes determine it, we cannot talk about the voluntary actions being free (Van den Enden 187). Hobbes posits that nothing is the cause of itself, i.e., when someone has a will, it means there must be an external cause that induces the will. Considering Hobbes's understanding of causality, there must be an efficient cause for a will to be brought upon. Taking all these into account, Hobbes concludes that "voluntary actions are necessitated" (Hobbes, *The Questions Concerning Liberty, Necessity, and Chance Clearly Stated and Debated in The English Works of Thomas Hobbes of Malmesbury, Volume 5* 373). Therefore, people are free to act as long as it is in accordance with their will; however, they do not have a free will to choose what will they are going to have. With modern terminology, it can be said that people have no saying on their *second-order volitions*¹⁶ while they are free to act as long as it is in according to their will. In his own words, Hobbes asserts, "... [a man or other creature] should have *election*, that is *liberty*, to do what he hath a fancy to do, though it be not in his *will* or *power* to *choose* his fancy, or choose his *election* and *will*" (Hobbes, *Hobbes's Tripos, in Three Discourses in the English Works of Thomas Hobbes of Malmesbury, Volume 4* 247).

According to Hobbes, names refer to objects of the real world (Martinich, *Thomas Hobbes* 98). For example, the term "cup" designates all the cups, but the name cup is

¹⁶Second-order volitions (or *higher-order volition*) are basically desires about desires. The term was coined by Harry G. Frankfurt (1929).

a particular name referring to a real-world object. As Wolfgang von Leyden claims in his review of *De Corpore*, there is a justification for categorizing particulars together, according to their shared characteristics or *accidents* (von Leyden 73). In *De Corpore*, Hobbes calls those names that denote only the causes of concrete names *abstract names* (Hobbes 32). On the other hand, Hobbes defines *universal names* as the “...name of many things severally taken, but not collectively of altogether is therefore called a universal name” (Hobbes, *De Corpore* 20). However, he doesn’t claim that this universal is an entity existing in the world or in mind. And in that sense, Hobbes was a nominalist philosopher, meaning that he believed that only universals are names. It is simply a name of another name. In other words, a cup is never a universal being, but it is just a common name given to similar other objects. What this word corresponds to in our minds is, again, a common feature that a specific cup shares with other cups. With this reasoning, Hobbes claims that we need our faculty of imagination to understand the scope of a universal name (Hobbes, *De Corpore* 20). Moreover, there are times that we use different universal names to mention other groups, even though it is possible they may have the same extensions. This use of language or terms enables us to talk about different contexts or with different focuses. For example, “rational beings” and “humans” can be considered as having the same extensions, however to say “every rational being will die” is not the same with saying “every human will die,” however, thanks to the different universal names, we can use different names with the same extension depending on the context. In *De Corpore*, Hobbes calls those names that denote only the causes of concrete names as *abstract names* (Hobbes 32). By “*the causes of concrete names*,” Hobbes refers to the same thing with the causes of our senses, i.e., *accidents* (Hobbes 32–33). In that way, Hobbes claims that the most significant role of the abstract names is to allow us to compute or reason about properties, which would be impossible in other cases (von Leyden 74).

CHAPTER 5

HOBBS'S LOGIC

5.1. Introduction to Hobbes's Logic

Hobbes claims in *Leviathan* (1651) that everything studied in the universities was Aristotelian in a way that they were not studying philosophy but Aristotelity (Hobbes, *Leviathan* 688). Calling the old Aristotelian doctrines mixed with the Church as “*vain philosophy*,” Hobbes wanted to move away from the principles that constitute the vain philosophy (Hobbes, *Leviathan* 688). Vain philosophy is basically drawing conclusions without knowing the causes behind, or in Hobbes's words: “philosophy of all men that resolve of their conclusion, before they know their premises” (Hobbes, *Leviathan* 696). He gives a detailed explanation of the problems caused by vain philosophy in Chapter 46 of *Leviathan*. For example, according to Aristotelian doctrines, there are *incorporeal essences* that are separated from bodies. Hobbes asserts that this is a problem caused by vain philosophy. Because those who accept this duality of beings would claim, for example, that when someone dies, their souls be wandering around, leaving their bodies behind. But for Hobbes, it is impossible for something incorporeal to be moving because he explains motion with respect to “change of place.” Since incorporeal essences do not occupy place, it is not possible for them to be changing it (Hobbes, *Leviathan* 693). This is one of the problems caused by the followers of vain philosophy. To deal with those problems, he investigates concepts that are used in reasoning, such as *names* or *definitions*. Which actually relates to his approach to logic that which progresses by using names, sentences, and their relations with each other.

He starts his *De Corpore* with a chapter called *Computation or Logic* (*computatio sive logica*) (Hobbes, *De Corpore* 1). Computation only consists of addition and subtraction in Hobbes's understanding. He says that "to compute, is either to collect the sum of many things that are added together or to know what remains when one thing is taken out of another" (Hobbes, *De Corpore* 3). He regards division as *multiple subtractions* and multiplication as *multiple additions*. In other words, all reasoning (or "ratiocination" in Hobbes's words) activities are achieved by those two operations. In this way, we think, comprehend, or reason. Saying that reasoning is a process of computation, Hobbes does not imply that thinking is limited to numbers. On the contrary, computation includes the events where we add different concepts together to have an overview of one particular and more general concept. He gives an example of a man. When one realizes there is something far away, even if one cannot clearly see what it is, one can still say that it is a body. If one sees that body is coming nearer, one can attribute being animated. Then lastly, after observing it or interacting with it, one can realize that it has characteristics of those who have a rational mind. In light of all these, adding body, animated and rational together, one can conclude that it is a man (Hobbes, *De Corpore* 4). This is an example of how our reasoning works in computational means.

Hobbes defines names in the second chapter, propositions in the third chapter, and syllogisms in the fourth chapter of *De Corpore*. After discussing them, he demonstrates how a rational mind makes mistakes and how syllogism is the reason for those mistakes in chapter five. He claims that "errors which happen in reasoning, that is in syllogizing, consist either in the falsity of the premises or of the inference" (Hobbes, *De Corpore* 57). Here we see why Martine Pécharman claimed that Hobbes used *syllogism* just as a Greek word for the "*act of reasoning*" (Pécharman 32). It might seem contradictory to claim that Hobbes's use of syllogism is nothing but an act of reasoning, but then talk about concepts like the middle term or general term since those terms are used in the traditional understanding of syllogisms and even though it implies the act of reasoning, it contains more than it. However, this is only contradictory when one takes logic and knowledge production as different topics. As Hobbes examines in detail in chapter four of *De Corpore*, syllogism, taken as an act

of reasoning, is also an act of knowledge production and it can be seen from his definition and explanation of syllogism (Hobbes, *De Corpore* 44–55).

To understand Hobbes's approach to logic, the place of speech in his system must be acknowledged, because speech plays an important role in philosophy for Hobbes. It is because speech lays at the very center of syllogisms. In *De Corpore* he claims that speech occurs when words are connected in such a way that they signify our thoughts (Hobbes, *De Corpore* 15). And for him, speech is used to convert our mental discourse to verbal (Hobbes, *Leviathan* 101). Speech is important for Hobbes that is because without clearly establishing the meaning of a speech used in exchanging ideas with each other or also in one's train of thoughts in their own mind, there cannot be a true ratiocination. And since ratiocination is the basis of the whole philosophy, speech is of utmost importance. Because of this reason, Hobbes analyzes the basic parts and forms of reasoning in detail. Hobbes defines speech as consisting of names and appellations and their connections through which one expresses his thoughts to others, and also use it as a mean to remember their past thoughts (Hobbes, *Leviathan* 100).

5.2. Treatment of Names

5.2.1. Distinctions of Names

As speech is important for Hobbes, names also play a crucial role for his philosophy. Because names are the main components of speech and therefore, of language. Hobbes gives a detailed account of differences between names, their *abuses*, and how those mistreatments lead to problems both in *Leviathan* and in *De Corpore*. In *Leviathan* Hobbes makes a distinction between *proper names* and *common names*. Proper names are those that refer to one and only thing, for example Peter, John, this tree (Hobbes, *Leviathan* 102). And common names, often called *universal names*, are the names that

are common to many things such as *tree* or *man*. Additionally, there are seven distinctions among names that he explains in *De Corpore*. The first distinction is between positive names and negative names (Hobbes, *De Corpore* 18). While positive names highlight similarity or equality, the negative names do the opposite. The example he gives for positive names is *a man*, while the example of a negative name is *not a man*. Notice here that the negatives require prior existence of positives. This is because, for example, without something being called *white*, there would be infinitely many other possible names for things that are not white such as blue, black, transparent etc. (Hobbes, *De Corpore* 18–19). Hobbes asserts that by negative names we realize what we have not thought of and signify that to others (Hobbes, *De Corpore* 19). Moving from here, Hobbes asserts that positive and negative names are opposites of each other and they cannot belong to the same thing together; in other words, something cannot be both white and not-white at the same time. He claims that the view that two contradictory names cannot be the name of the same thing together is the foundation of philosophy (Hobbes, *De Corpore* 19). This is similar to the *law of noncontradiction* which states that something cannot be both itself and not itself at the same time.

The second distinction was explained in details in the paragraph that discusses the proper and universal names. Proper names are those names that are *proper* to only one thing, for example *that man* or Hobbes's example *he that writ the Iliad* (Hobbes, *De Corpore* 19). Universal names (also called *common names*), on the other hand, are the names that can be applied to many things taken together, such as *a living being*, or *stone*. Hobbes emphasizes that universal names are not names of anything in particular, but rather they are just names that are shared by many things (Hobbes, *De Corpore* 20). Also, there is a kind of a hierarchy among universal names, which means that some names are more universal than others. He gives the example of *man* and *living creature*. *Man* is a less universal name than *living creature* since it can be applied to a smaller number of entities. And this difference of extension leads to a difference between *genus* and *species*. While *genus* is a more universal name, *species* is less universal compared to the former. It is good to keep in mind that this relation between

genus and species only occurs within a specific context. Put differently, for something to be a species in respect to some other thing, the former must include the latter.

When it comes to the third distinction, Hobbes mentions the names of the first intention and the names of the second intention. The first intention, in this context, is to give names to objects or to particulars, such as *a tree, a man*; and the second intention is to give names to names, for example *universal, particular, universal* or *genus* (Hobbes, *De Corpore* 21). It can be said that it is the first intention to name things that we encounter in our everyday life while it is the second intention to name the names. Moreover, Hobbes mentions a mistake of claims that using the names of the second intentions as names of things, while they can only be used as names of names. In other words, for example, to talk about *definition* as being a name of something in the nature is a mistake (Hobbes, *De Corpore* 21).

The fourth distinction of names is related to their ways of signification. Hobbes offers two kinds of names with respect to their significations; *names of determined signification* and *names of undetermined signification*. Individual names are of determined signification, like *Homer, that person*. Names such as *all, every, either* are also determined names because they signify everything that they have in common, for example if I say, “all trees are living beings,” this is a determined signification as it applies to every tree possible. Moreover a person that hears the name signified by one of those determined names will conceive the same thing that the speaker had in mind (Hobbes, *De Corpore* 21). This means that since “all trees are living beings” does not designate one specific tree, but all the trees, one who hears that sentence would conceive the same thing with the one who utters it. Undetermined, or *indefinite* significations are the ones that contain words like *some* or other words like that. Also, universal names that does not have neither universality signifier (all, or every) nor particularity signifier (some) before them are undetermined, too. For example, *man, stone* are undetermined, while *some men, or all stones* are determined. Since undetermined names and particular names have uncertain signification, they are to be seen as equivalent in this sense of speech. On the other hand, words that add other

names universality or particularity (such as *every*, *all*, *some*) are not names, they are parts of names and only of names (Hobbes, *De Corpore* 22).

The fifth distinction of names is between *univocal* and *equivocal names*. Univocal names always signify the same thing in the same context, while the equivocal names have more than one signification. Hobbes gives an example of a triangle and a parabola; while the name triangle always understood in the same sense and that is why it is univocal, on the other hand a parabola can be in different shapes in different times as it can be a parabola of a certain geometric figure at one time, and of another figure at a different time, therefore it is equivocal (Hobbes, *De Corpore* 22). Hobbes's another distinction is of the names *relative* and *absolute*. Relative names offer a comparison or a relation, for example, *cause*, *effect*, *equal*, *unequal* etc. Absolute names, on the other hand, are the ones that does not contain any relation.

The last distinction of names is between *simple* and *compounded* names. Put simply, as long as a name is the most common one, it is a simple name; while a name, that was made less universal by addition of another name is a compounded name. Hobbes gives an example of a *body*, since that it is used for a single conception, it is a simple name. But on the other hand, since the name *animal* contains both being *body* and also *animated*, it is a compounded name (Hobbes, *De Corpore* 24). This is a similar process to what we have in our minds; compositions of different names into a name is similar to the composition of different conceptions that we have in our minds into one single conception.

When it comes to Hobbes's approach to universal names, even though it is a nominalist approach, it is not a strict one. His nominalism comes from his claim that only universals are names. Hobbes does not assert any kind of existence for universals other than in the language. In *Leviathan* he asserts that "nothing in the world universal but names" (Hobbes, *Leviathan* 102). In Hobbes's terms, we can say that we group different particulars under the same label by appealing to their similitudes in some aspects or to them having certain accidents and call them universal names (von Leyden 73). He claims that the reason behind grouping different objects under some universal

name is the fact that they share a property. It is not an arbitrary decision to label, for example, a journal as a notebook, but a decision caused by some of the properties of journals that they share with other notebooks. This is why he uses universal name and common name interchangeably; he asserts that a common name is a name of a shared property of different particulars, interchangeability comes from the fact that a universal name is also a name of a shared quality (Hobbes, *De Corpore* 19–20). It is better to keep in mind that, Hobbes does not claim that universals have any being outside the language (Hobbes, *De Corpore* 20; Hobbes, *Leviathan* 102). We comprehend universals by our faculty of *imagination*, and that is enough for that. Universals, in our minds, refer to the thoughts of different objects or living beings.

The universals that have the same extensions may differ in their intensions, too. This difference is later mentioned by W.V.O. Quine in his 1951 paper called “*Two Dogmas of Empiricism*” with an example of the ‘creature with a heart,’ and ‘creature with a kidney’ (Quine 21–22). Universals are, of course, important for Hobbes because without them we wouldn’t be able to express our thoughts of some properties like ‘heat’ or concepts such as ‘humanity’ (von Leyden 74). Hobbes calls such names *abstract* and claims that they do not refer to the things themselves, but only the causes of concrete names for example *to be cold, to be a body etc.* (Hobbes, *De Corpore* 32). Moreover, he asserts that the causes of names are also the causes of our sensations. Zarka claims that by treating names in this way, Hobbes reduces the essence of a thing to be an accident according to which we assign a name to a body (Zarka 69). In other words, Zarka claims that Hobbes’s theory of being and being known was explained in terms of propositions rather than an expected ontological approach (Zarka 69). This can be interpreted as Hobbes explains beings with respect to language, since he builds a bridge between the essence of a thing and the name of that thing and the name of a thing comes from its accidents, not by its true nature. And accidents are dependent on us, as our conception of something relies on its accidents and by them we name those things, not by things themselves. Therefore, Hobbes given an account of beings from a linguistic point of view.

5.2.2. Abuses of Speech

Not registering and using the names correctly leads to abuses of speech. In *Leviathan* Hobbes names four different abuses of speech, all of which leads to a problematic consequence (Hobbes, *Leviathan* 102). One of those abuses comes from our inconsistent use of words. One who uses words inconsistently may register their thoughts wrong and deceive themselves. Because words are used to record conceptions, and when those conceptions are recorded falsely, one could mistake themselves and may think that they have thought about things that they have never actually conceived. Metaphorical use also leads to an abuse, and this is the second type of abuses. Metaphorical use of names, by nature, are equivocal and that is why they can be used incorrectly (Hobbes, *De Corpore* 22–23). Third one is about arguing with words while those words are not in fact what is wanted to be advocated. To illustrate, using *metaphysics* as “the study of supernatural entities” while thinking about metaphysics as “the books that are written after the books of nature” and positing a desire to study of metaphysics would be categorized under the third kind of abuse of names. And the last abuse of speech is to use words to grieve an enemy, in other words, to use words to insult or hurt someone is an abuse of speech. Because nature equipped living beings with different kinds of ways, each of which to be used to hurt our enemies or to defend ourselves when we are faced with them. (Hobbes, *Leviathan* 102). However, when we use speech as a defense tool, it is an abuse.

5.3. Marks, Signs and Names

But in which form our ideas and thoughts are contained in mind? Hobbes asserts that *marks* are the names given to what is left in our minds after sensing a thing and by using marks, we remember the idea of a thing. And *words* are marks that we use to represent our mental states. In that sense, it can be concluded that our sensations are

stored in our minds as *marks*. Primary use of names, for Hobbes, is to serve as marks (Hobbes, *Leviathan* 101; Hobbes, *De Corpore* 14). The second use of names, on the other hand, is to serve as *signs* through which we build relations between different sensations¹⁷. We use signs to communicate our thoughts to other people. He gives an example of a dark cloud signaling rain (Hobbes, *De Corpore* 14). Since the relationship between a dark cloud and a rain is not arbitrarily established, Hobbes claims that the dark cloud in this example is a *natural* sign. But there are also *arbitrary* signs that which we use to transfer our ideas to others. To illustrate that he gives an example of a bush in front of the store signifies that wine is sold there. More simply, he asserts that when a name is used for remembering a thing, it is a mark; and it is a sign when it is used as a way to transfer our thoughts to others (Hobbes, *De Corpore* 15). Hobbes goes on to say that those words which we use as signs of our thoughts make up the *speech*, and every part of a speech is called *a name*, and while they serve as marks in our minds, they can also be used as means of communication (Hobbes, *De Corpore* 15–16).

To explain how the relationship of conceptions in our minds correspond to the relationship of names and their compositions, Hobbes lays out a difference between *simple names* and *compounded names*. Because with this distinction it is easier to see the way our thoughts become the way they are, come together and produce new thoughts. He first gives a heads up and says that this distinction is not something similar to the distinction made by grammarians as one name being a *simple* name whereas a name that contains more than one name is a *compounded* name. In Hobbes's sense, 'sentient animated body' is a simple name, whereas a grammarian would call it a compounded name. For Hobbes, a simple name is the most common one in a particular concept. In other words, a simple name would signify a lot more particulars than a compounded name. To make it clear, a compounded name is that which is made up of coming together of more than one simple name, and that compounded version is less universal than a simple version (Hobbes, *De Corpore* 23–24). This "being more

¹⁷ Bertman claims that the difference between marks and signs for Hobbes is the fact that while former is used for our mental acts, the latter is used to express ourselves to others (Bertman 537).

(or less) universal” here means to designate more (or less) particulars. For example, ‘body’ is a simple name because it denotes something that which occupies space, and nothing else. In other words, there is nothing that can be subtracted from the name ‘body’. However, ‘animal’ is not a simple name for Hobbes because it is the same as ‘animated body,’ that is the composition of more than one simple name, and, therefore, a compounded name. In terms of universality, ‘body’ has a bigger extension than an ‘animal’ since ‘body’ also contains, for example, animals too. And he uses this distinction to explain the relationship between the addition of concepts to one another in mind and also in the names themselves. Hobbes treats names and conceptions very similarly; however, it is not much of a problem because even his definition of marks relates both to the language, also to our ideas. He claims that the cause behind our conceptions and names is the same: an affection of the thing conceived, in other words, the *accidents*¹⁸ of the things.

5.4. Propositions

Moreover, when two names¹⁹ come together, they make up a *proposition*. If we use Hobbes’s examples, ‘man’ and ‘a living creature’ are both names. When they are added together, it becomes ‘man is a living creature,’ and here we have a proposition. In a proposition, the former name is comprehended by the latter (Hobbes, *De Corpore* 30). Truth or falsity of a proposition does not exhibit any essential characteristics of the names contained in the proposition. For Hobbes, truth is a property of speech, not of things; and in *Leviathan* he explains that when two names come together to make

¹⁸ *Accidents* are neither the things themselves nor their parts. They simply accompany the things (Hobbes, *De Corpore* 33).

¹⁹ Hobbes does not mention what kind of names lead to a proposition when they come together. However, considering his proposition examples like “man is a living creature”(Hobbes, *De Corpore* 30) and “body is moveable” (Hobbes, *De Corpore* 31) it can be concluded that he means both kinds of names.

up a sentence, if the latter name designates everything that the former name does, the sentence is an affirmative one and then the sentence is true. (Hobbes, *Leviathan* 104–05). There are *primary propositions* for Hobbes, and he claims that they are the *definitions*. Giving an account of names and propositions comes in handy when we are dealing with *sylogisms*. A syllogism, in Hobbes’s words, is “a speech consisting of three propositions, from two of which the thirds follows” (Hobbes, *De Corpore* 44).

5.5. Syllogisms

Before moving even further, it is crucial to note this: every definition or every explanation Hobbes has given so far is all related to our faculty of ratiocination, in other words, our capacity of knowledge production. And syllogism is not something different than that, but it is a process at the end of which we come to obtain new information and knowledge. In a syllogism, there must be three terms at a total of three propositions; predicate of the conclusion in a syllogism is called the *major term*, the subject of the conclusion is called the *minor term*, and the term that relates those two propositions (or, basically the other term) is called the *middle term* (Hobbes, *De Corpore* 45). To explicate, Hobbes offers an example syllogism; a man is a living creature, a living creature is a body; therefore, a man is a body. In this syllogism, ‘a man’ in the first proposition is the *minor term*, ‘living creature’ in the same proposition is the *middle term* (also called as *subject*), and lastly, ‘a body’ of the second proposition is the *major term* (Hobbes, *De Corpore* 46). Moreover, the proposition that contains the minor term is called the *minor proposition*, and the one that contains the major term is called the *major proposition*. Another point to be made about syllogisms is the way of deciding whether the conclusion is true or not. In the example given above, since all the names included in the major and minor propositions are the same thing, the conclusion is also true. In other words, since being a *man* means also being a *body* and a *living creature*, this syllogism can be interpreted as:

‘A living, body’²⁰ is a living creature.

A living creature is a body; therefore,

‘A living, body’ is a body.

With that reasoning it can be seen that the conclusion is true because the middle term is already contained in the minor term.

In mind, syllogisms occur in relation to phantasms. When someone perceives an accident of a thing, the name of that thing is the subject of the minor proposition. The predicate of the minor proposition, on the other hand, is the phantasm of an accident of the very same thing. And the last thing we need for a syllogism here is the predicate of the major term which is the perception of another accident of the same object (for example, in the example given at the end of the last paragraph, ‘being a body’ is another property of a man, together with ‘being a living creature’).

It is important to remember that it is not the case that a human mind reaches true conclusions all the time. In other words, humans can error in their reasonings. But it seems problematic considering the way how reasoning works since it is such a systematic process. Hobbes gives an account for erroring in the fourth chapter of *De Corpore*. He claims that errors occur while syllogizing because of a problem either in the premises (i.e. in the *matter* of the syllogism) or in the inference (i.e. in the *form* of the syllogism) (Hobbes, *De Corpore* 57). For a proposition to be true, the two names that are contained in it must be the names of the same thing. In other words, if a sentence copulates two different names, the sentence would be false; for example, “a cake is a feeling’ is not only false, but it is also meaningless (Hobbes, *De Corpore* 58). Because copulation of names of different things produces meaningless sentences. Hobbes gives the reasons of this by listing the four different kinds of names; *bodies*, *accidents*, *phantasms*, and *names themselves* (Hobbes, *De Corpore* 58). In that sense, a name must be copulated with a name of its own kind, for example a name of an accident must be copulated with another accident. Hobbes asserts that “no name of an

²⁰ Even though it does not play a role in this example, it is better to keep in mind that Hobbes defined *man* as “rational, animated, body” (Hobbes, *De Corpore* 4).

accident ought to be given to a body, nor of a body to an accident” (Hobbes, *De Corpore* 59). This can be interpreted as the copulation of names that are of different kinds leads to a problem or a falsity. Problem here refers to the mistaking a name of a one particular kind to be another. And Hobbes calls those kinds of propositions as *false propositions*. A syllogism built on false propositions leads to false conclusions which needs to be avoided for obvious reasons. Falsities, Hobbes claims, occur from the wrong usage of names, not from senses or things themselves (Hobbes, *De Corpore* 56).

5.6. Definition

Definition, in this context, is the analysis of a name into its most fundamental parts. Hobbes’s definition of definition is “...it is a proposition, whose predicate resolves the subject, when it may; and when it may not, it exemplifies the same” (Hobbes, *De Corpore* 83–84). Therefore, to define something one needs to find the most universal names contained in the thing in question. Definitions are the only primary propositions because only definitions signify the way of generations (Hobbes, *De Corpore* 81–82). That is why they are the only principles of demonstrations, because they do not require demonstrations of themselves since their truth is established by the creators of speech (Hobbes, *De Corpore* 37). Because of that reason it is important to start reasoning with true definitions; otherwise, one would only reach false conclusions. In *Leviathan*, Hobbes asserts that one who is aiming for true knowledge must reconsider and, if necessary, revise what the former thinkers posited as definitions. Because if there is a problem in the definitions that are at the very beginning of a particular view, they only multiply themselves as the thinking process moves on and cause a much bigger problem at the end (Hobbes, *Leviathan* 105).

5.7. Naming and Signifying

Hobbes also deals with one of the hot topics of the 20th century, namely, the difference between naming and signifying. And he built a bridge between this linguistic distinction and his understanding of body and accident. The difference between naming and signifying is a problem that was also dealt with in Middle Ages, as I have mentioned in the *Medieval Logic* chapter. According to Hobbes, there is a difference between signifying and denoting. He claims that the signification of a word is not the object that the word names; on the other hand, expressions signify what is in an utterer's mind (von Leyden 73). This means that a sign would name a thing, but it does not refer to the object itself. A sign signifies the impression of the thing that the utterer has in mind. In a way, we can say that expressions signify the accidents, or they signify our conceptions²¹. He says that, for example, when the word stone is used, it should be understood that the speaker thinks of a stone; in other words, the word stone does not directly signs a stone (Hobbes, *De Corpore* 17). To signify bodies, speakers use terms. Especially, the extension of terms have their real correspondent objects; that is why they refer not to the thoughts of the speaker but the real world (von Leyden 73). This reference of a term to a real object in the real-world stems from the fact that a term signifies an object, even though it is not the object's real existence but rather its conception in the mind of the speaker. On the other hand, the intension of a term is related to the speaker's mental states, such as their thoughts, beliefs etc. Therefore, the intension of an expression relies on the signification. There is no meaning without communication for Hobbes (von Leyden 75). Because meaning comes from signification and unless one needs to pass on their thoughts to others, there is also no need for signification.

Speech and communication play a great role for Hobbes's whole philosophy too, since he claims that there will not be a transfer of knowledge without communication, there

²¹ Hobbes says "names are signs of our conceptions, not signs of the things themselves" (Hobbes, *De Corpore* 17).

would not be a possibility of signing a social contract, that which ensures the well-being of every human. Because to offer or to sign a contract, there must be a mutual understanding of the meaning. In *Leviathan* Hobbes explains that for social contract, men sometimes renounce or transfer their rights to others in order to maintain peace. Even these acts themselves are *declarations* or *significations* by some signs (Hobbes, *Leviathan* 191). And those signs can be word, actions, or both. Moreover, he claims that there may be rights that cannot be expressed or understood by signs, and since they cannot be signified, they can neither be renounced nor transferred (Hobbes, *Leviathan* 192). Signing of a social contract is dependent on communication, especially on signification through which one expresses their conceptions of an object in reality.

5.8. Method of Philosophy

Since it is the responsibility of philosophy to find out the causes behind effects, Hobbes claims that the method of the philosophy should be the “...*shortest way of finding out effects*” (Hobbes, *De Corpore* 66). But then, what is this method that we use while looking for the effects? Remember that ratiocination consists of addition and breaking off of concepts; in other words, it is the resolution or the composition of concepts. Because of this, the method of philosophy should also be compositive or resolute. Because only in that manner one can examine the products of ratiocination (here *product* refers to *knowledge attained through ratiocination*). Hobbes asserts that while the compositive one is often called the *synthetical method*, the resolute is called the *analytical method* (Hobbes, *De Corpore* 66). What we do when we are trying to reach a piece of new information is to move from what we already know to the things we haven't acknowledged yet. Therefore, at first, we are concerned with what we already have. And in accordance with Hobbes's view, in philosophy, we first possess the knowledge of the effects (before the causes) and because of this, it is better to start with the analysis of the knowledge of the effects rather than the knowledge of the causes.

5.8.1. Analytical Method

Similar to the difference between the knowledge of the effects and the knowledge of the parts, what is more familiar to us is the knowledge of the whole rather than its parts because before examining the details of a thing, we are first faced with itself as a whole. After perceiving something as a whole, we later figure out its parts. For example, when we first see a particular tree, only thing we can say about it is its being a tree. But after acknowledging its being a tree, later we can talk about its part, for example, its branches or its fruits etc. Taking his lead from this view, Hobbes claims that whatever has a universal name is more known to us. In other words, it means that universals are more known to us, as well as to nature, than particulars (Hobbes, *De Corpore* 68). We come to the knowledge of universals by analytical method because when we have something of which that we are looking for its causes, at first, we break it down into its smaller parts if it is possible. This possibility comes from the knowledge of the defining properties of the thing in question. If we know those properties, then we can consider its smaller parts. For those cases, Hobbes gives an example of gold; when the conception of gold is to be resolved, we would have the concepts like solid, visible, and heavy (Hobbes, *De Corpore* 69). All those concepts are more universal than the concept of gold itself because they can be applied to more objects than gold. For example, *solidness* can be attributed not only to gold but to many other objects as well, such as rocks, mugs etc. Those concepts are the universals that come together and make up gold; and by using the resolutive method (or the method of analysis), we can attain the knowledge of the parts that make up gold. And since concepts are universals, Hobbes claims that by the analytical method, we reach the universal knowledge of things by looking at the properties of them ²².

²² According to Hobbes causes of universal things are presented in themselves, that which is *motion*. Motion, therefore, is the ultimate cause and that is why we don't have to look for the causes of motion which is, again, motion.

5.8.2. Synthetical Method

On the other hand, when it comes to the synthetical method, we move from effects to their causes. For example, when we are drawing a line, we see what kind of motion that was made by a pencil causes the drawn line. So, we came to the conclusion of what kind of effect was produced when we directed the pen in a specific manner. And Hobbes claims geometry is the result of this kind of compositive method (Hobbes, *De Corpore* 71). It is good to keep in mind that, for Hobbes, it is not possible for a thing to lack some of the causes normally that makes it up and still for it to come to being. Put differently, same group of effects will always produce the same cause and a cause cannot be produced with some of those effects lacking. Rather, for an effect to be produced, always the same causes must come together. In that sense, to attain the knowledge of the causes of a thing, it is not possible to find out some of the causes behind a particular thing and dismiss others. This can be interpreted that with the synthetical method, one would not be risking the totality of knowledge while listing the causes of a given effect. Therefore, when one finds out all the accidents of a thing, it will be evident that the same effect will be produced every time the same causes come together, because “...*aggregate of accidents is the entire cause*” (Hobbes, *De Corpore* 77). Which means that the cause can come to exist only when all the effects are combined.

Philosophy makes use of both analytical and synthetical methods for different reasons. On the one hand, the analytical method is used when trying to understand how an effect came to being. And on the other hand, the synthetical method comes in handy while trying to show how the parts come together and make up a whole or a *cause*. This has particular importance because, in that way, whatever is being studied also becomes something that can be *demonstrated*. Because if one knows every part of a thing, then one can talk about the causes that plays a role in the making of that thing; therefore, can show the very basic parts of it. Since our thoughts are doomed to perish unless we share them with others, demonstration plays a great role in philosophy. Because unless

we demonstrate our thoughts, we cannot expect them to be known by others that is why Hobbes puts a special emphasis on the importance of demonstration. To teach and to share our thoughts, we need demonstration because the leading that was used in the former sentence means to let others see the method that you have already used while inventing that piece of knowledge. He also defines teaching as leading other minds to the paths through which we have already attained the knowledge that we are trying to teach (Hobbes, *De Corpore* 80). According to Hobbes, demonstration uses the synthetical method as it starts with fundamental propositions and moves into syllogisms (Hobbes, *De Corpore* 81). His definition of demonstration is a syllogism or a series of syllogisms that moves from definitions of names to a conclusion (Hobbes, *De Corpore* 86). Conclusions that we reach through correct reasoning are *definitions*, and according to Hobbes, there are two types of definitions: definitions of names of which that we can posit their causes, and the second type of definitions are the definitions of names about which no cause can be conceived. When definitions contain some kind of cause, it is necessary for them to include names that declare some kind of cause or a manner of their generation (Hobbes, *De Corpore* 81). Conclusions used in demonstrations are reached by the addition of two definitions. Unless definitions contain the knowledge of a cause, the conclusion wouldn't give us any information about the generation of or the nature of something and therefore, that syllogism cannot be considered as contributing to science²³ and Hobbes claims that it is against the very scope and intention of the demonstration (Hobbes, *De Corpore* 83). Therefore, we produce scientific knowledge only when we begin our ratiocination by true principles, and true ratiocination is the same with the true demonstration (Hobbes, *De Corpore* 86).

²³ Because for Hobbes, the aim of science is the “demonstration of the causes and generations of things” (Hobbes, *De Corpore* 82).

5.9. Individuation

Another example concerning how Hobbes treats ontological issues as linguistic ones is his approach to *individuation*. Individuation means to differentiate one body from the others. In the second part of *De Corpore*, he gives an account of how we can compare a body to itself at different times. If we define a body through its aggregate of accidents when an accident is lost or added to the very same body, we will need to posit a new name for that, and it would not be the comparison of the same (Hobbes, *De Corpore* 136). Therefore, we need an account that makes it possible to treat the object as remaining the same while allowing the possible changes in its accidents. Here Hobbes also mentions that if we take matter as the center of individuation, there would be also problems since, for example, baby Socrates grows up and his body changes over time even though he remains to be Socrates (Hobbes, *De Corpore* 137). His solution to this problem is to look for the name of the individual to decide whether they are still the same or not. This means that unless the name that we have given to an identity is changed, it can be treated as the same thing. With this approach, for one more time, we see that Hobbes offers solutions in language and solve what is at first seem to be a problem related to the very being of the thing.

CHAPTER 6

CONCLUSION

As it is established in the second chapter, the medieval logic contains many remarkable works and it would be an injustice to call that period as a philosophical dark age. Besides continuing to study Aristotelian themes, they also introduced new themes like insolubilia, or the distinction between categorematic and syncategorematic terms and these contributions had an effect on the direction of the logic at that time and also in the future studies. Without denying the formal aspects of logic, they highlighted the parts that were closely interwoven with language and directly to the knowledge production. Along with those, medieval thinkers' approach to the problem of universals was from a logical view. The analysis of medieval logic provided us with an example for the problem of using specific definitions while writing a history of something. Because if we were to claim that logic was a just a tool that was only used when philosophy needed, we might have fallen to the same mistake with Kneales' and claim that there was nothing much to consider in the medieval times with regards to logic. However, as it is shown in the Medieval Logic chapter, there were many studies during the time that are impossible to be overlooked. And some of them (such as problem of universals, signification, supposition, and the distinction between categorematic and syncategorematic terms) were so influential in philosophy that they are still being discussed today. Therefore, to claim a period that introduced and studied those topics to be an unimportant period would be wrong. However, as it is shown, that mistake comes from using an absolute definition throughout the whole history, from the earliest Greek studies to today. Rather, one can realize how the topic and the extent of that which they are writing a history of changes with time, and writing the history with that in mind would offer a reliable and inclusive account.

The other issue I had in mind was the consideration of logic and philosophy as having no relationship with each other. To argue against this claim, I claimed that there are

times in the history where there are many events are happening in very different aspects of life and those times are also the times where there is a grown interest to philosophy and logic. It is not a coincidence that they are happening altogether at the same time. This shows that there is a parallelism between the times where logical and philosophical works rise. Looking at the time Hobbes lived in, we see that there are huge problems in terms of governance, freedom of speech, health etc. To be able to solve those problems, people turn to the question of knowledge because, occurrences of those problems means that the understanding of knowledge that they already have is creating new problems, let alone being helpful to produce solutions. Moreover, in Hobbes's system, it is seen that it is almost impossible to consider his views apart from each other. For example, without knowing Hobbes's approach to the universals, his understanding of names would seem incomplete. In general, philosophical systems should not be examined singling out some parts, but rather they must be examined as a whole. This fact also signals that the logic and philosophy are interconnected to each other.

Very briefly, in this thesis I show that logic is essentially the way of producing knowledge. Just like what Hobbes asserted, logic is reasoning, and reasoning implies a conclusion, regardless of the fact that this conclusion either be true or not, drawing an inference or reaching a conclusion produces a new knowledge. This is one of the reasons why logic and philosophy should not be considered separately. Because of that reason it can be concluded that logical and philosophical progresses also show parallelisms. As a result, we see that logical progress happens when there is a demand for a new knowledge. This demand comes from the problems in the society that are unsolvable with the set of the old knowledge. Seeing that old systems are not handling issues well, people turn to philosophy, therefore, also to logic. Another crucial point of this thesis was to show that writing a history of something while sticking to strict definitions would result in missing some parts, events or overlooking some important advances. That is why I argued against Kneales' argument about middle age as a dark age in terms of logic and showed that there are many significant studies done in that time such as signification, or study of universals. This analysis was used to show that history of science should be done with a philosophical-cum-historical approach, in that sense one can capture everything done in that particular science, without any gaps.

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APPENDICES

A. TURKISH SUMMARY / TÜRKÇE ÖZET

Felsefi sistemlerin doğruluklarının ve geçerliliklerinin gösterilebilmesi için argümanlar açık ve sağlam bir şekilde kurulmalıdır, bu sebeptendir ki argümantasyon, felsefe yapmanın temelinde yer alır. Bir diğer deyişle, belirli bir sonuca nasıl ulaşıldığı gösterilmediği sürece argümanın doğruluğundan emin olunamaz. Bu yüzden, Jonathan Barnes mantık için, felsefeye dönmeden önce kişilerin ustalaşması gereken bir enstrüman olduğunu iddia eder (Barnes 531). Benzer şekilde, Peripatetikler de mantığı felsefenin bir aleti olarak gördüler ve bu, mantığın *organon* olarak görüldüğü anlayıştır. Bu yaklaşıma göre mantık yalnızca, felsefi sistemler oluşturulurken argümantasyon için faydalanılan bir alettir. Eğer bu fikri doğru kabul edersek, mantıksal ilerleme yalnızca argümantasyon yöntem ve biçimlerinin ilerlemesinden ibaret olacaktır. Ayrıca bu yaklaşım, mantıktaki yenilik ve gelişimin sadece felsefenin ihtiyaç ve talebi doğrultusunda ortaya çıktığı yorumunu beraberinde getiriyor. Mantığın organon kabulü aynı zamanda da mantığın kendi ilerlemesinin sebebi olan herhangi içsel bir işleyişinin olmadığını; aksine mantığın dışsal etkiler çerçevesinde ilerleme gösterdiğini de ima eder. Öte yandan ben bu çalışmada bu görüşe karşı çıkıyorum ve bunu sağlamak adına örnekler sunarak, “mantık organondur” görüşünün mantık tarihinde de bazı dönemlerin göz ardı edilmesine sebep olduğunu gösteriyorum. Bunun en net örneğini Kneale’lerin ünlü kitabı *The Development of Logic* (1971) görüyoruz. Kneale’ler on beşinci yüzyıldan on dokuzuncu yüz yılın ortalarına kadar mantık açısından pek de konuşulacak şeyler olmadığını söylüyorlar (Kneale and Kneale 298). Bu yargılarının ardında yatan sebep ise Kneale’lerin mantık tanımında yatıyor. Kitabın başında, mantığı tanımlarken “geçerli çıkarım kuralları ve geçerlilik çalışması” sözlerini kullanıyorlar. Her ne kadar bu tanım yanlış olmasa da,

mantık tarihi yazarken kullanılmak için yeterli değil. Çünkü disiplinler tarih içerisinde değişime uğrarlar, dolayısıyla da tek bir tanıma bağlı kalarak tarih yazmak söz konusu disiplinin tüm tarihini doğru yansıtmayabilir. Bunu mantık tarihine baktığımızda da görüyoruz. Kneale'lerin orta çağda mantık alanında önemli herhangi bir gelişme olmadığını söylemeleri de bu sebepten doğuyor; mutlak bir tanıma bağlı kaldıkları için disiplinlerdeki ilerlemeleri gözden geçiriyorlar. Öte yandan, orta çağda mantıksal gelişmeyi sağlayan birçok çalışma var. Bu mesele de, tezin sunmak istediği bir başka önemli noktayı gösteriyor; mantıksal ilerleme ve felsefi ilerleme birlikte gerçekleşir. Bir başka deyişle, çok sayıda felsefi çalışmanın olup da hiçbir mantık çalışmasını olmadığı görülmemiştir. Neden ve niçin felsefi çalışmaların sayısı artar? Felsefeye olan ilgi hangi dönemlerde yükselişe geçer? Felsefe tarihine baktığımızda görüyoruz ki felsefi çalışmalar üniversiteler ve bilim çevreleri gibi entelektüel yerlerin hareketlendiği zamanlarda artıyor. Fakat bunların hepsinin hareketlenmesi toplumda da ortamın hem siyasi hem sosyolojik açıdan hengâme içinde kaldığı dönemlere denk geliyor.

Bir diğer yandan Stoacılar, Peripatetiklerin aksine, mantığın bir alet olduğu fikrini desteklemediler. Stoacılar için mantık yalnızca bir argümantasyon aleti olmanın ötesinde, diyalektik gibi bilgi üretme yöntemlerini de içeriyordu (Stoianovici 126). Bu yorumdan hareketle, Stoacıların mantığı, felsefenin bir parçası olarak gördüklerini söyleyebiliriz. Benzer bir şekilde ben de mantığın, felsefe eyleminin ayrılmaz bir parçası olduğunu iddia ediyorum. Ve bu argümanımı desteklemek adına felsefi ilerleme ile mantıksal ilerleme arasındaki paralellikleri göstereceğim.

Bu çalışma belirli bir zaman diliminin mantık tarihini tutarlı ve güvenilir bir biçimde sunabilmek adına, söz konusu zamanın mantığını felsefeyle ilişki içinde sunmak gerektiğini gösterecek. Çünkü, incelediğimizde göreceğimiz gibi, felsefi açıdan zengin dönemler aynı zamanda mantıksal açıdan da oldukça zengin dönemlere denk geliyor. Bunun sebebi o belirli zamanlarda şans eseri bir şekilde çok üretken insanların yaşadıkları anlamına gelmez, buradan yapılacak çıkarım; mantığın ve felsefenin birbirlerini karşılıklı olarak besledikleri ve dolayısıyla da birlikte ilerledikleridir. Bu fikri desteklemek için Thomas Hobbes (1588-1679) üzerine bir vaka çalışması

sunacağım. Çünkü Hobbes yukarıda da bahsedilen, bu tezin iki temel iddiası için harika bir örnek oluşturuyor; birinci olarak, Hobbes'un yaşadığı dönem öyle bir dönemdir ki hem entelektüel hem de toplumsal alanda büyük bir karmaşa gözlemleniyor, bu da bize felsefe ve mantık çalışmalarının yükselişe geçtiği zamanlar için bir örnek oluşturuyor. İkinci olarak ise, Hobbes mantığı felsefi sisteminin merkezine koyuyor ve dolayısıyla da felsefesi mantıktan bağımsız değerlendirilemez oluyor. *De Cive* (1642) ve *Leviathan* (1651) gibi ağırlıklı olarak siyasetten bahsettiği eserlerinin yanı sıra Hobbes doğa felsefesini konu alan *De Corpore* (1655) ve *De Homine* (1658) eserler de kaleme almıştır. *De Corpore, computatio sive logica* (hesaplama ya da mantık) adında dikkat çekici bir bölümle başlar. Buradan başlayarak Hobbes, tüm felsefesini mantıksal temeller üzerine kurar ve bunun için de ilk olarak mantık anlayışını açıklar. Hobbes'u bu tez için ideal bir örnek yapan da budur, çünkü felsefe ve mantık ilişkisini Hobbes'un gözünden bakarak çok daha net bir şekilde görebiliyoruz. Hobbes'un hem felsefeye hem mantığa yaklaşımını daha iyi anlamak için ise orta çağ mantığı ve felsefesine kısaca değiniyorum.

Tezin ilk bölümü, orta çağ döneminde yapılan mantıksal çalışmaları ele alıyor. Bunu yapmaktaki amaç ise hem Hobbes için bir arka plan bilgisi sunmak hem de orta çağın, mantık açısından *karanlık çağ* olmadığını göstermek. Orta çağ döneminde ortaya atılan konuların gelecek mantık ve dil felsefesi çalışmalarını da şekillendirdiğini düşünürsek, orta çağ mantığını tanımak oldukça önemli. Dahası, *anlamlandırma* ve *tümeller problemi* gibi orta çağda ortaya atılan meseleler özellikle on altıncı ve on yedinci yüzyıl olmak üzere, takip eden yıllarda ana meseleler olmayı sürdürdü. Dolayısıyla orta çağ felsefesini ve mantığını anlamak Hobbes'un felsefesini anlamayı kolaylaştıracaktır.

Orta çağ döneminin önde gelen filozoflarından Anicius Manlius Severinus Boethius (475-526) Aristoteles'in meşhur eseri *Organon*'un beş bölümünü çevirdi. Bunlar sırasıyla *Kategoriler*, *Önermeler*, *Birinci Analitikler*, *Topikler* ve *Sofistik Çürütmeler* eserleridir (Uckelman 1). Boethius'un bu çevirileri orta çağ mantığının şekillenmesinde büyük rol oynadı ve orta çağ mantığı bir açıdan, Aristoteles mantığının devamı gibi bir görüntü aldı. Ancak orta çağı Aristoteles ile sınırlamak

dođru olmaz. Çünkü Aristoteles çalışmalarının yanı sıra, yeni birçok konu da çalışıldı. Örneğın *sophismata* bu konulardan biri. Sophismata, özünde, birden fazla yoruma yol açan argüman dizileridir. Birden fazla yoruma açık olmaları, üzerlerine iş yapılabilmesini zorlaştırır. Öte yandan, tartışmalar sırasında dođru kullanılan sophismata, tartışmacının konuyu kendi lehine çevirmesine olanak da sağlayabilir. Bu yüzden üzerinde çalışılması hem günlük hayatta hem bilgi üretimi ve felsefede faydalı olacak konulardan biridir sophismata.

Tartışma ve münazaralarda mantıktan faydalanmak orta çağda da hala yaygındı. Bunun biraz daha ilerleyen seviyelerde kullanımını Petrus Ramus'ta (1515-1572) görebiliyoruz. Ramus'a göre herhangi bir bilimde uzmanlaşmadan önce, mantıkta ileri seviyelere gelinmeliydi, çünkü argümantasyonun ve bilgi üretiminin temelinde yatan mantık anlaşılmadan, diđer herhangi bir konuda da tutarlı argümanlar öne sürmek oldukça zor olacaktır. Orta çağda öne sürülen signification (anlamlandırma) konusu da gelecekteki dil felsefesi, zihin felsefesi ve mantık çalışmalarının şekillenmesinde etkili olmuştur. Lambert of Lagny'nin (1250) tanımına göre anlamlandırma “şeyin kavramı, sözü eden kişinin aklından geçen kavramdır” (Lagny 104). Bir bakıma anlamlandırma, sözcük ile sözü kullanan kişinin zihni arasındaki ilişki olarak görülebilir. Şeylerin özünü bir yana bırakıp, bilen/konuşan öznenin deneyimine dönülerek yapılan bir açıklama olması açısından anlamlandırma, özellikle de çıktığı dönem göz önüne alındığında, oldukça ilginç bir yaklaşımdır.

Tümeller problemi de orta çağda ele alınan önemli meselelerden biridir. Tümellerin varlıklarının, tikelleri öncüllediğini iddia edenler Boethius ya da Saint Anselm gibi realistlerdir. Boethius'a göre, tümel, birden fazla tikelin ortak bir özelliğidir. Ve bu ortaklık, söz konusu tikellerin hepsinde aynı anda var olur (Spade 3). Bir diđer yandan Ockham'lı William (1287-1347) gibi nominalistlere göre ise yalnızca tikeller vardır, tümeller yalnızca zihinde, düşünce nesnesi olarak varlardır, bu fikre *fictum theory* adı verilir (Read 272). Peter Abelard (1079-1142) gibi kavramsalcılar ise tümellerin tikelerde var olduğunu ancak fiziksel olarak ayıramaz olduklarını söyler. Abelard'a göre tümeller yalnızca zihinde tikellerden ayrılabilir.

İkinci bölümde, yaşadığı zamanı daha iyi anlayıp, felsefesine etkilerini anlamak amacıyla kısa bir Hobbes biyografisine yer veriyorum. On yedinci yüzyılda İngiltere zaten fazlasıyla karmaşıktı (İngiliz İç Savaşı, dış saldırılar, veba salgını) fakat İngiltere’de doğup büyümesine rağmen Hobbes aynı zamanda birçok Avrupa ülkesini de gezdi ve bu sayede de diğer memleketlerde entelektüellerin baş etmek zorunda oldukları farklı problemleri de gözlemleme şansını yakaladı. Örneğin, Hobbes’un Galileo Galilei ile tanışması, Galileo’nun fikirleri yüzünden ev hapsinde olduğu döneme denk geliyor (Martinich 91). Bu geziler ve tesadüfler Hobbes’un hayatında önemli yer sahibi olan anlardır çünkü fikir ve görüşlerinin şekillenmesinde etkili olmuşlardır. Birinin felsefi sistemini anlamaya çalışırken, o kişinin hayatını da öğrenmek büyük önem taşır çünkü fikirlerin gelişiminde hayattaki deneyimlerin de büyük etkisi olmuştur. Hobbes da bu konuda bir istisna değildir. Biyografisine bir bölüm ayrılmasının ardındaki sebep de budur. Benzer şekilde, İngiltere’de eserlerinin basımını yasaklanması, tam da onun aktif olduğu dönemlerde kurulan Royal Society’ye alınmaması gibi olayların hepsi Hobbes’un eserlerine ve bakış açısında etkilerini gösteriyor.

Üçüncü bölüm ise Hobbes’un doğa felsefesini ve bunun yanında felsefi yöntemle yaklaşımı, uzay ve zaman hakkındaki fikirleri ve sebep sonuç ilişkisi anlayışı gibi farklı yönlerini ele alıyor. Hobbes fikirlerini öyle bir biçimde inşa ediyor ki, sonuna gelindiğine hepsi bir araya gelerek bir bütün oluşturuyor. Örneğin, mantık anlayışı genel felsefi anlayışıyla öyle iç içe ki, bağımsız olmanın aksine; en önemli parçalarından biri. Dolayısıyla mantığı hakkında konuşup, üzerine çalışabilmek için öncesinde doğa felsefesine dair görüşlerini anlamak gerek. Ve ayrıca, bunları birbirine katkıda bulunan parçalar olarak incelemek gerekir. Hobbes’un felsefesi “ilk sebep” fikriyle başlar. Bir şeyler üzerine açıklama getirebilmek adına, o şeyin hangi koşullarda yaratıldığını anlamamız gerektiğini söyler Hobbes ve bunu yapabilmek için bilinmesi gereken, o şeyin en temelinde yatan ilk nedendir. Fakat bu sebep ve sonuç ilişkisini incelemeyen önce, zaman ve uzay kavramlarını anlamakta fayda var çünkü, sebep sonuç ilişkisine dair bilgiye deney ve gözlem yoluyla ulaşıyoruz ve bunlar uzay-zamanda gerçekleşiyor. Hobbes’a göre uzay, şeylerin var olabilecekleri fikridir. Hobbes uzay için *phantasm* sözünü kullanır. Phantasm, en temelde, duyularımızla elde

ettiğimiz fikirlerdir. Dolayısıyla uzay, yer kaplayan cisimlerin zihinde bıraktığı fikirdir. Zaman ise, hareket phantasmıdır, yani; hareket eden herhangi bir şeyin zihinde bıraktığı his zamandır Hobbes'un felsefesinde.

Üretim (ya da yaratım) bilgisi Hobbes için önemlidir. Çünkü bir şeyin bilgisine varmak için ihtiyaç duyduğumuz şey, o şeyin nedenleridir. Ve nedenlerin bir araya gelişinden, o şeyin nasıl üretileceği bilgisine erişiriz. Bir diğer deyişle, bir şeyin doğasını anlayabilmek için o şeyin nasıl meydana geldiğini anlamamız gerekir. Bu noktada, Hobbes için geometrinin önemi konusuna geliyoruz. Çünkü geometri, nasıl üretildiklerini bildiğimiz nesnelere üzerine çalışır. Örneğin, üçgen geometrinin nesnelere biridir ve bir üçgenin nasıl üretildiğini biliriz. Nasıl üretildiğini bildiğimiz şeylerin mutlak bilgisine sahip olduğumuz söylenebilir. Dolayısıyla da geometri, Hobbes'a göre, bir nevi bilimlerin temelidir. Doğa kanunları ya da doğa felsefesi konusuna mutlak bilgiye asla ulaşamayacağımızı söyler Hobbes. Çünkü doğayı yaratan tanrıdır ve tanrı aynı sonuca sonsuz farklı şekilde ulaşabilir (Hobbes, "Dialogus Physicus" 351). Bizler bunların bazılarının bilgisine erişebilirsek dahi, bu asla mutlak bilgi olmayacaktır.

Benzer şekilde Hobbes bilimleri iki gruba ayırıyor: kanıtlanabilir bilimler ve kanıtlanamaz bilimler. Kanıtlanabilir bilimler, bizim inşa ettiğimiz nesnelere ilgilendir. İnşa etmek, nesnenin nedenleri bilmekte yatar, bu yüzden de kanıtlanabilir bilimler nedenlerini bildiğimiz nesnelere ilgilendir. Bu yüzden geometri kanıtlanabilir bilimlerden biridir. Öte yandan doğal nesnelere (insan, ağaç gibi) nasıl var edildiklerini bilmiyoruz. Bu yüzden de doğal nesnelere çalışırken, kesin yargılarda bulunmaktan ziyade, muhtemel sonuçlar veya sebepler hakkında tahminde bulunuyoruz. Hobbes, nesnelere nasıl inşa edildiğini bilmediğimiz bilimler için kanıtlanamaz bilimler der ve bilimlerin büyük çoğunluğunun bu türden olduğunu söyler (Malcolm 33).

Dördüncü bölüme gelindiğinde ise Hobbes'un mantığı açıklanıp, tartışıldı. Hobbes'a göre, akıl yürütme (ya da mantık) hesaplamayla aynı şeydir. Fakat hesaplama ile genellikle sayılarla yapılan toplama, çıkarma ve benzeri işlemler kastediliyor olsa da,

Hobbes burada bahsedilen hesaplamanın illa ki sayılarla olması gerekmediğini, isimlerin hesaplaması da olabileceğini söylüyor (Hobbes, *De Corpore* 3). Zihinlerimizde, isimlerle hesaplamalar yapıyoruz ve bu yeteneğimiz sayesinde düşünebiliyor, felsefe yapabiliyor ve hatta hareket ettiğini gördüğümüz bir cisme “hareket edebilme” kavramını atfetmek gibi basit zihinsel işlemleri yapabiliyoruz. Yani, hesaplama yapmak için isimleri kullanıyoruz ve bu yüzden de Hobbes isimlerin analizi, farklı isim türleri ve cümle içindeki konumlarına göre edindikleri roller üzerine açıklamalar getiriyor.

Hobbes kelimelerin rolleri ve çeşitleri üzerine geniş bir açıklama getiriyor. Buna yer vermesinin sebebi ise, tasımlamalarda ortaya çıkan problemlerin çoğunlukla öncüllerden ya da çıkarımdan kaynaklandığına inanıyor olması (Hobbes, *De Corpore* 57). Bu problemlerin önüne geçmek adına kelimelerin görevlerini netleştiriyor. Burada dikkat çekmemiz gereken bir nokta da, Hobbes’un tasımlamayı “akıl yürütme eylemi” anlamında kullanıyor olması (Pécharman 31). Bunun dikkate değer olmasının sebebi ise, tasımlamanın sembolik mantığın konusu olduğu görüşünün yaygın olmasında yatıyor. Tasımlamanın, akıl yürütme ile eş anlamlı olduğunu söylemek, tasımlamanın da bir bilgi üretimi olduğunu söylemektir. Bu da tezin ana meselesi olan mantık ve felsefe ilişkisi üzerine çok şey söyler. Çünkü, eğer tasımlama bir bilgi üretimi ise, mantık ve felsefenin de birbirlerinden bağımsız ve alakasız disiplinler olduğunu iddia etmek yersiz olacaktır.

Hobbes’un mantığa yaklaşımını anlarken, Hobbes sisteminde sözün yerini anlamak önemlidir. Çünkü söz, tasımlamanın merkezinde yer alır. Bahsedilen söz, illa vokal olmak zorunda değildir. *De Corpore*’de Hobbes, kelimelerin, düşüncelerimizi ifade etmek için bir araya gelişinden söz ortaya çıkar der (Hobbes, *De Corpore* 15). Sözün önemli olmasının bir nedeni, kendi düşüncelerimizi netleştirmediklerimiz ya da bir başkasının düşüncelerini kendi zihnimize yerleştiremediğimiz takdirde akıl yürütmenin mümkün olmayacak olmasıdır. Bu yüzden ki, söz yalnızca başkalarıyla iletişim kurmak için değil, aynı zamanda da kendi zihinsel eylemlerimiz için de önemli yer tutar.

Sözü oluşturan öğelerden biri isimlerdir. İsimleri incelerken Hobbes'un yaptığı ilk ayırım, özel isimler ile sıradan isimler arasındadır. Özel isimler, yalnızca tek bir belirli şeyden bahseder (*Peter, John, şu ağaç*) (Hobbes, *Leviathan* 102). Öte yandan sıradan isimler, ki genelde tümel isimler diye bahsedilir, birden çok şeyde ortak olan özelliklerden bahsedilirken kullanılır, *ağaç* ve *adam* gibi. İsimler arasında yedi farklı ayırım yapar Hobbes, ancak bizim için en önemli ayırım, az önce bahsedilen, özel isim ile tümel isimler arasındaki ayırımdır. Çünkü bu noktada Hobbes'un nominalizmini de görmüş oluyoruz. Hobbes'a göre dilden başka hiçbir yerde tümeler yoktur (Hobbes, *Leviathan* 102; Hobbes, *De Corpore* 20). Tümeler yalnızca, belirli şeylerin başkalarıyla paylaştıkları ortak özelliklerden bahsederken kullanılırlar.

İsimlerin görevlerine göre oynadıkları rollere dönersek, zihnimizde fikirlerimizin oluşumu ve saklanması söz konusu olduğunda *işaretlerden* (marks) yararlandığımızı söyler Hobbes. Bir şeyleri algıladıktan sonra onları hatırlamamız işaretler sayesinde gerçekleşir. *Kelimeler* zihnimizdekileri ifade ederken kullandığımız işaretlerdir. Zihinsel faaliyeti, diğer edimlerin öncesine koyan Hobbes, isimlerin başlıca kullanımının işaret olarak kullanılmak olduğunu söyler (Hobbes, *De Corpore* 14; Hobbes, *Leviathan* 101). Öte yandan *göstergeler* (signs) başkalarıyla iletişim kurmamızı sağlar. Göstergeleri örneklemek adına bulutlardan bahseder Hobbes; kara bulutların yağmur ihtimalini göstermesi de bir çeşit göstergedir (Hobbes, *De Corpore* 14). Ancak bulut ve yağmur arasındaki ilişki doğaldır, bu yüzden bulut için *doğal gösterge* diyebiliriz. Fakat, başkalarına fikirlerimizi belirtirken kullandığımız göstergeler doğal değil, *keyfi* (arbitrary) göstergelerdir. Kısacası, bir şeyleri hatırlarken isimleri işaret olarak kullanıyoruz, düşüncelerimizi başkalarına iletirken ise gösterge olarak (Hobbes, *De Corpore* 15).

Dahası, Hobbes *isimlerin kötüye kullanılması* adını verdiği, anlaşmazlıklara ve paradokslara sebep olan meselelerden bahsediyor. Bu mesele yine Hobbes'un sistemindeki önemli meselelerden biri çünkü Hobbes'un bu konuyu açıp, kötüye kullanımlardan uzak durmak istemesinin sebebi, bu kötüye kullanımların *beyhude felsefeye*, ya da *Aristoteles Metafiziğine* sebep olduğuna inanıyor olmasıdır (Hobbes, *Leviathan* 688–89). Bu bölümün devamında, bilgi üretmenin farklı yöntemleri

inceleniyor. Bu inceleme, Hobbes'un bakış açısından felsefe ve mantığın birbirlerine bağılılıklarını gösteriyor.

Yani kısacası bu tezde, mantık, felsefe ve dünyada yaşanan diğer olayların birlikte yükselip, birlikte düşüşe geçtikleri gösterilecek. Bu denk gelmenin sebebi de mantığın, bilgi üretiminin kendisi olmasında yatıyor. Çünkü bilgiye olan ihtiyaç, halihazırda eldeki bilginin, problemleri çözmeye yetemeyecek konuma geldiği zamanlarda artışa geçiyor. Ve Hobbes'un vaka çalışması olarak alınması da bu iddia için güzel bir örnek sunuyor. Çünkü Hobbes'un yaşadığı dönemde dünya, farklı farklı alanlarda farklı farklı meselelerle uğraşıyordu, dolayısıyla da felsefe ve mantık çalışmalarında, Hobbes'ta da görebileceğimiz gibi, büyük bir artış vardı çünkü yeni bilgiye ihtiyaç duyuluyordu. Bu tezin vurguladığı bir diğer mesele de orta çağ bölümünde görüldüğü gibi, mantığı yalnızca bir organon olarak tanımlayıp, bu tanım üzerinden tarihini yazmanın tarihi çarpıtmak olacağıdır. Burada dikkat edilmesi gereken iki önemli nokta var; ilk olarak, eğer mantık, felsefenin kullandığı bir aletse, mantık sadece felsefe kendisine ihtiyaç duydukça gelişme gösterir mi dememiz gerekir? Eğer mantıksal ilerleme bu şekilde gerçekleşmiyorsa, nasıl gerçekleşiyor? Ve ikinci nokta ise, herhangi bir disiplinin ya da konunun tarihini yazarken, belli tanımlara bağılı kalmak problemler doğurur çünkü, tarihi yazılan şey zaman içerisinde değişime uğrar ancak belirli bir tanıma bağılı kalındığı takdirde belli zamanlarda yapılan şeylerin ya da gerçekleşen olayların görmezden gelinmesi işten bile değildir.

Kısaca özetlemek gerekirse, ikinci bölümde gösterildiği gibi, orta çağ mantığı birçok önemli çalışma içeriyor ve bu dönemi felsefi karanlık çağ olarak adlandırmak adaletsizlik olacaktır. Aristotelesçi temalar hakkındaki çalışmaların sürdürülmesinin yanı sıra, insolubilia ya da categorematic ve syncategorematic terim ayrımı gibi birçok yeni konu ortaya attılar. Ve bu katkıları hem o dönemki mantık çalışmalarının yönünü belirledi hem de gelecekteki mantık ve dil felsefesi çalışmalarına önyak oldu. Felsefenin formal boyutunu yok saymadan, dille ve bilgi üretiminin kendisiyle fazlasıyla ilişkili olan yönlerine de dikkat çektiler. Bunların yanı sıra, orta çağ düşünürleri, örneğin tümeller problemini, mantıksal açıdan ele aldılar. Orta çağ mantık tarihinin incelenmesi, bir şeylerin tarihini yazarken kesin tanımlarına bağılı kalmanın

yarattığı problemleri de bizlere gösterdi. Çünkü eğer biz de mantığın sadece bir organon olduğu fikrine tabi kalsaydık, Kneale'lerin düştüğü yanılığa düşerek orta çağ mantığının önemli konular içermediği iddiasında bulunabilirdik. Öte yandan, orta çağ mantığı bölümünde gösterildiği gibi, söz konusu dönemde görmezden gelinmesi imkânsız olan çalışmalar mevcut.

Tezde ele alınan bir diğer mesele ise mantık ve felsefe arasında hiçbir ilişki olmadığı fikriydi. Bu iddiaya karşı çıkmak adına, dünya tarihinde aynı anda, hayatın farklı yerlerinde, birçok olayın yaşandığı dönemlerin aynı zamanda mantık ve felsefeye olan ilginin yükselişe geçtiği dönemlere denk geldiğini gösterdim. Bunların hepsinin aynı zamanda yaşanıyor olması tesadüften ibaret değil. Hobbes'un yaşadığı zamana baktığımızda yönetim, ifade özgürlüğü ve sağlık gibi alanlarda büyük meseleler olduğunu görüyoruz. Bu meseleleri çözebilmek adına insanlar bilgi sorusuna dönüyorlar, çünkü bu meselelerin ortaya çıkıyor olması, halihazırdaki sistemlerin problem yarattığı ve dahası, yarattığı problemleri çözmekte başarısız olduğu anlamına geliyor. Felsefe ve mantığın ilişkisine bir örnek de Hobbes'un felsefi sisteminden geliyor. Hobbes'un görüşlerini birbirinden bağımsız incelemek neredeyse imkânsız. Örneğin, Hobbes'un tümellere yaklaşımını bilmeyen biri için, isimler hakkındaki görüşleri eksik gözükcektir. Genel olarak, felsefi sistemler bir bütün olarak incelenmelidir, belli kısımları ayrı tutarak değil. Bu durum, felsefe ve mantığın birbirlerine bağlı olduklarının bir başka göstergesidir.

Çok kısaca, bu tezde mantığın en temelde bilgi üretme yöntemi olduğunu gösterdim. Hobbes'un da ortaya koyduğu gibi, mantık akıl yürütmedir ve akıl yürütme bir sonucu beraberinde getirir. Bu sonuç doğru da olsa yanlış da olsa, çıkarımda bulunmak ya da bir sonuca ulaşmak, bir bilgi üretimidir. Bu felsefe ve mantığın neden ayrı ayrı incelenmemesi gerektiğine dair sebeplerden biridir. Bu sebepten ötürü, felsefi ve mantıksal ilerlemenin paralellikler gösterdiği söylenebilir. Sonuç olarak, mantıksal ilerleme, yeni bilgiye ihtiyaç duyulduğu zamanlarda ortaya çıkar. Eski sistemlerin, problemleri çözmekte başarısız olduğunu gören insanlar, felsefeye ve dolayısıyla da mantığa dönerler. Bu tezin bir diğer önemli fikri de bir şeyin tarihini yazarken mutlak ve kesin tanımlara bağlı kalmanın bazı parçaların ve olayların gözden kaçırılması ile

ya da bazı önemli ilerlemelerin yok sayılmasıyla sonuçlanabileceğini göstermekti. Kneale'lerin orta çağ, mantık açısından karanlık çağdır fikirlerine karşı çıkmamın sebebi ve anlamlandırma ya da tümeler üzerine yapılanlar gibi orta çağda gerçekleştirilen çalışmalardan bahsetmemin sebebi de budur. Bu inceleme, bilim tarihinin felsefi ve tarihi bir yaklaşımla yapılmasını gerektiğini göstermekte kullanılmıştır. Çünkü ancak bu şekilde söz konusu bilimde yapılan her şey yakalanabilir ve tarihi eksiksiz biçimde sunulabilir.

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