

CARNAP ON THE METHOD OF PHILOSOPHY

A Master Thesis

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To Fatih and Oğuz, who made it possible to finish this work.



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ABSTRACT

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This thesis examines Carnap's view on the method of philosophy. More specifically, it examines his gradual inclusion of non-formal elements to an initially formal method of philosophy. In his early period, Carnap proposes merely a formal method of philosophy to which he calls *rational reconstruction*, *logical analysis* and *logical syntax*. However, in his late period with the addition of some non-formal features such as semantics and pragmatics Carnap's method becomes less and less formal. The decrease in the formal aspects of Carnap's method of philosophy indicates the inadequacy of formal methods on their own and the need for the non-formal features in the method of philosophy. It is argued that the non-formal aspect of philosophy is essential and philosophy and its method cannot be merely formal.

Keywords: Explication, Formal Method, Rational Reconstruction, Semantics, Syntax.

ÖZET

FELSEFE METODU ÜZERİNE CARNAP'IN DÜŞÜNCELERİ

Kaya, Hatice

Yüksek Lisans, Felsefe Bölümü

Tez Danışmanı: Dr. Öğr. Üyesi Saniye Vatansever

Mayıs 2020

Bu tez felsefenin yöntemine dair Carnap'ın fikirlerini incelemektedir. Özellikle, onun başlangıçta formal olan felsefî metodolojisine tedricen formal olmayan elementleri dahil etmesini irdeler. Carnap, ilk döneminde, rasyonel rökonstrüksiyon, mantıksal analiz ve mantıksal sentaks diye adlandırdığı formal bir felsefî metot önerir. Fakat, daha sonraki döneminde ise, semantik ve pragmatik gibi bazı formal olmayan kısımların eklenmesiyle Carnap'ın metodu formallikten adım adım uzaklaşmıştır.

Anahtar Kelimeler: Açıklama, Formal Method, Rasyonel Rekonstrüksiyon, Semantik, Sentaks.

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INTRODUCTION

Logical Positivism is a significant philosophical movement formed by early-twentieth century philosophers. Even though these philosophers differ from one another on important subjects quite sharply, what makes them in the same group is the common concern for a scientific philosophy or for a scientific methodology that makes philosophy more scientific and less speculative. Given the situation of early twentieth century, which is the time of the separation of many fields such as mathematics, physics, chemistry, and the social sciences from philosophy one by one, this concern is quite understandable. As each field including sociology and psychology set off their own methodology, they departed from philosophy and become a distinctive scientific field. This historical development of science left last century's philosophers with the question of what is left to philosophy and what is the relation of philosophy to science. The answers to these questions also pave the way to redefine and reshape the aim and the methodology of philosophy as well as to understand what makes the last century's philosophy so different from the traditional philosophy.

Philosophers who are concerned with the aforementioned questions, include Otto Neurath, A.J. Ayer, Kurt Gödel, W. V. O. Quine, Donald Davidson and Saul Kripke. Since only science provides actual knowledge for these philosophers, philosophical discussions only make sense if the philosophical statements have the determinate truth-value. Among them, Rudolf Carnap is one of the most important pioneers of the logical positivism for his lifelong aspiration for a new philosophical methodology; namely the method of explication.

According to Carnap, the objective of philosophy should be to clarify the concepts and propositions of science by means of the methodology of explication (Carnap

1935: 12). By explication, Carnap means “transforming a given more or less an inexact concept into an exact one” (Carnap 1950: 1). He searches for new philosophical concepts (explicatum) instead of old ones (explicandum), which –he claims– are not a result of “deliberate formulation, but in more or less unreflected and spontaneous development” (Carnap 1967: V). Unlike the old ones, the new definitions acquired through the method of explication are clear and exact, therefore superior to the old ones.

One of the main questions regarding the method of explication is about whether it is a purely formal method or not. On the one hand, some of the Carnap’s work shows a very strict formalist approach. Those who argue that Carnap’s method of philosophy is a formal method argue that Carnap attempts to save philosophy by introducing a new formal tool to rescue philosophy from the subjective endless disputes. Hence, on this reading, with his formal method of explication Carnap aims to make philosophy more exact and scientific.¹

The problem with this reading is that there are various passages that conflict with this formalistic understanding of Carnap’s method. In particular, in his writings where Carnap introduces non-formal tools, such as semantics and pragmatics contradict with this previous formalistic interpretation.² Thus, it is possible to find supporting textual evidence for both interpretations in Carnap’s different works.

As I will show, this interpretive problem arises due to focusing exclusively on either Carnap’s early works or his later works. Thus, if we pay attention to the gradual development of Carnap’s philosophy and examine how his views on the method of philosophy changes over time, we can see that even if he starts with a very formal approach, his account becomes less and less formal.

¹ Carnap is either accused or appreciated for being a formalist since some of the Carnap’s early work shows a very strict formalist approach. For instance, Michael Friedman (1999) appreciates this aspect of Carnap’s philosophy whereas Giovanni Boniolo (2003) considers Carnap’s explication as a failure by regarding this method as a mere formal tool.

² Ken Westphal (2015) criticizes Friedman for considering Carnap’s philosophy as formal by paying attention to non-formal parts of Carnap’s philosophy such as descriptive semantics.

That is why, rather than seeing the difference between the early and later writings as a conflict, I argue that we should interpret this change as a development in his thinking. In order to identify the breaking point in his thought of line, at which he realizes the need to add non-formal elements to his methodology, I will separate the early works from the later works. And rather than reading his works as pointing towards an inner conflict in his philosophy, I propose reading them as a continuous maturation of his thought.

As I will demonstrate, what Carnap means by the method of explication goes through important changes. Carnap uses this method of explication quite differently in his early and late writings. That is, for instance, in his early writings, Carnap uses different terms to refer to the method of philosophy, such as *rational reconstruction* and *logical analysis*. In his more mature phase of his philosophy, however, he states that the method of philosophy is *explication*. Of course, the name of the method is not the only thing that changed, its nature also evolved in time. While Carnap's early works strongly emphasize the formal aspects of this methodology, we see that his later works show less and less formal characteristics.

Specifically, I determine three different transition points from formal to less formal in Carnap's philosophy and in each chapter of my thesis, I will discuss one of the transitions that Carnap has gone through regarding the methodology of philosophy. The first chapter is about the transition from the definitions of concepts to the explication of concepts. This chapter consists of three sections. In order to analyze the early form of explication, in the first section, I focus on the *rational reconstruction* model and its requirement of definition of the concepts that is developed in *The Logical Structure of the World* (1928). In particular, I explore the reasons for the failure of *rational reconstruction* model as Carnap himself admits by focusing on *The Logical Structure of the World* (1928). In the second section, I investigate how *rational reconstruction* transforms into *explication* model within the *Logical Foundation of Probability* (1950). Finally, in order to elaborate the role of definitions and their application on the formal methods in philosophy, I examine Kant's views on definition and his views on the methodology of philosophy. This chapter explains why Carnap's early attempts of providing full definitions fails and how this leads Carnap to pursue his aim of clarification of concepts on more flexible

grounds in his later works.

Having explained the problems with the method of *rational reconstruction* and full definitions, in the second chapter, I focus on Carnap's move from the method of *logical analysis*, which is a method in syntax to *explication* which involves semantics. In particular I examine whether this transition signifies a move from a formal to a non-formal method. Carnap introduces the method of *logical analysis* in one of his early works which is *Philosophy of Logical Syntax* (1935). In this book, there is a strong emphasis on syntax and deliberate neglect of semantics. At this time, all philosophical problems are merely syntactical problems for Carnap (Carnap 1935: 31). However, as will be clear in this chapter, Carnap gradually becomes aware that purely formal method of syntax cannot account for the empirical characteristics of the scientific propositions, which is why he feels the need to include semantics to his methodology in his book *Introduction to Semantics* (1942). In order to see whether the formal nature of his methodology has changed with the addition of semantics, I will explore the characteristics of semantics as well as the background motivation for Carnap's shift from syntax to semantics. Specifically, I underline how and why Carnap needs to reform his purely formal logical syntax to the partially logical-formal methodology by including the non-formal aspects of language incrementally, namely the semantics and pragmatics.

In the third chapter, I discuss the third transition point in Carnap's methodology. While early Carnap thinks that a single formal metalanguage is the only possible framework of language, after the adaptation of the principle of tolerance, late Carnap accepts the possibility of other language frameworks. For example, in *The Logical Structure of The World* (1928) Carnap proposes a philosophical method to which he refers as *rational reconstruction* and it is a single logical system. After Carnap introduces the principle of tolerance, he gives up insisting on single formal metalanguage and becomes open to other possible languages in the method of explication. As will be discussed, the principle of tolerance also effects Carnap's general conception of philosophy. In particular, I examine the scope of the application of the principle of tolerance and explore whether should be restricted to formal languages or if it can apply to metaphysics as well.

In the concluding chapter, I discuss the results of these three important transitions in Carnap's philosophy. The first chapter points out the failure of the requirement of formal definitions in philosophy and replaces that requirement with a less formal strategy of explication of concepts. The second chapter focuses on the need for the non-formal or at least less formal domain of language, such as semantics. And finally, the third chapter examines how with the acceptance of principle of tolerance we introduce pragmatics into the previously formal domain. In brief, all these additions to the previously purely formal system indicate the insufficiency of formal methods by themselves. Thus, even though Carnap never gives up his method of explication, we can conclude that what he aims by this methodology displays less and less formal characteristics. Observing the reduction in Carnap's emphasis on formal aspect of explication provides deeper insight not just into the development of Carnap's thoughts, but also helps to understand why the method of philosophy cannot be reduced to merely formal domains. This in turn points out the fact that purely formal methods are not sufficient for philosophical investigation.

The formalist approach to philosophy is considered as a basis for rejecting traditional metaphysics and history of philosophy. As it is the case in early Carnap, when formal methods are seen as the only legitimate method of philosophy, all other approaches that are available in the history of philosophy are deemed, meaningless and therefore disregarded because they are deprived of these formal methods. This ahistorical approach does not belong to Carnap only but it is very dominant among logical positivist in general. The final chapter, therefore, elaborates on how the inadequacy of formal methods by themselves indicates the need for the non-formal aspects of philosophy.

CHAPTER 1: FROM DEFINITIONS TO THE EXPLICATIONS OF THE CONCEPTS

In this chapter, I will look at the method of *rational reconstruction*, which is the early version of explication. Specifically, I will look at why defining concepts is important in rational reconstruction model. After that, to see the difference between *rational reconstruction* and the method of *explication*, I look at the explication model that are developed in *Logical Foundations of Probability* (1950a), which is one of the later works of Carnap, as it will be seen, Carnap gives up the requirement of defining the concepts, instead he develops other criteria for the explication of the concepts. Lastly, I provide a historical criticism from Kant against Carnap's early project. In particular, I explain why Kant thinks that empirical concepts cannot be defined. Kant's criticism reveals the problems with the application of formal methods to philosophy.

Carnap writes *The Logical Structure of the World*, generally referred to as the *Aufbau*, between 1922-1925 and it is published in 1928. This book can be accepted as the most comprehensive work of early Carnap because Carnap systematizes his philosophical consideration and methodology in the *Aufbau* for the first time. Carnap develops his method of *rational reconstruction* in this book. However, as Carnap himself indicates in the preface to the second edition of the *Aufbau*, some of the views at that book will undergo significant change.³ For the purposes of this thesis

³ As Carnap states in the second edition (in 1961), there are various points in the first edition (1928) that he changed his mind about later on: "When I read the old formulations today, I find many a passage which I would now phrase differently or leave out altogether; but I still agree with the philosophical orientation which stands behind this book. This holds especially for the problems that are posed, and for the essential features of the method, which was employed" (Carnap 1961: V).

I focus primarily on the parts of *rational reconstruction* that are changed in late Carnap and examine how it transforms into the method of explication. However, I do not go into the technical details of rational reconstruction, instead I examine one of the most significant difference between rational reconstruction and explication, namely their different treatments of the philosophical concepts. As I argue, the main difference is that while the method of rational reconstruction requires the definition of the concepts, the method of explication requires clarifying the concepts and getting more exact concepts, as opposed to definitions.

1.1. Rational Reconstruction As An Early Form of Explication

In order to examine Carnap's method of rational reconstruction, we need to look at his book *Aufbau* (1928) where he adopts this method most clearly. In order to understand why Carnap develops the method of rational reconstruction, it is important to understand his aim of Carnap in the *Aufbau*. There are two competing views about the aim of the *Aufbau*. The Quinean reading of the *Aufbau* takes it as a radical empiricist project, in which the goal to show that every proposition is translatable into a proposition about phenomenological experience. In the *Aufbau*, Carnap chooses auto-psychological basis for his rational reconstruction which means that all scientific concepts are reduced to the 'given'. As he explains it in Preface to the second edition of the *Aufbau*, his main objective is to construct a higher order language based on the immediately given phenomenal experience, "in this book I was concerned with the indicated thesis, namely that it is in principle possible to reduce all concepts to the immediately given" (Carnap 1928: VI). Since Carnap emphasizes the significance of reducibility of all higher-level concepts to the given, Quine reads the *Aufbau* as a phenomenalist project. For Quine, the main objective of the method of rational reconstruction is to give justification of scientific knowledge based on immediate sense experience (Quine 1980: 38). However, Carnap also claims that the reducibility of all scientific concepts to a phenomenal language is not a necessary requirement of the method of rational reconstruction. As he writes:

A system such as the one I have just indicated, as well as the one given in this book has its basis in the "autopsychological domain". However, in the book I have already indicated the possibility of another system form

whose basic concepts refer to physical objects (Carnap 1928: VII).

As it is clear in this passage, Carnap believes that autopsychological basis is not only basis as there can be equally valuable other basis, such as physical basis for this method of reconstruction. That is why unlike Quine, Michael Friedman argues that the primary task of the *Aufbau* is not the classical empiricist task of reducing all scientific concepts to the immediately given. For Friedman, the main task of the method of rational reconstruction is achieve objectivity and the unity of science (Friedman 1999: 126). Friedman emphasizes that, the phenomenalist basis is not essential for Carnap's project in the *Aufbau*, it is just one of the other possible constructional systems, such as the physical basis and the hetero-psychological basis. So, on Friedman's reading what matters is the possibility of the construction theory, not the specific type of it. In other words, what matters in the *Aufbau* is the form, not the content of the construction.

These two ways of reading *Aufbau* are most well-known ones, however, the method of rational reconstruction involves many tasks at the same time. Revealing how scientific knowledge bases on sense experience and showing the unity and objectivity of science are both important aims of the *Aufbau*. This is because objectivity and unity as the goal of scientific discourse can only make sense if we have a subjective starting point.⁴ Therefore, having a phenomenal and subjective basis that needs to be transformed into an objective and formal language is important for this method. Since Carnap's main mission with this method of rational reconstruction is to transform what is subjective, non-formal, and un-structured data to an objective, formal, and scientific language, having a particular basis is important.

Carnap explains the necessity of this method at the *Preface* to the first edition (1928). He explains how the development of new logic effects the foundation of mathematics. When the philosopher also starts to follow a scientific discourse, this

⁴ I would like to thank my thesis supervisor, Saniye Vatansever, for providing her unpublished article "A Critique of Quine and Friedman's Reading of the *Aufbau*". I inspired from her article on the discussion of different aims of *Aufbau*.

logical method would affect philosophy inevitably. He conceives of the *Aufbau* as a step for this development and considers traditional philosophy, which lacks this logical equipment, as a kind of a poem (Carnap 1928: XVI).

This shows that rational reconstruction has two different tasks. On the one hand, the elimination of speculative and poetic work from philosophy is aimed. Similarly, in the *Aufbau* he starts with immediately given subjective phenomenal experiences only to eliminate them from the scientific discourse. On the other hand, Carnap aims to reconstruct objective scientific concepts in all fields of knowledge by means of rational reconstruction. Carnap explains this process of construction of concepts as follows:

A concept is said to be reducible to others, if all statements about it can be transformed into statements about these other concepts; the general rule for this transformation of statements for a given concept is called the *construction* of the concept (Carnap 1928: 15).

In other words, what is meant by construction is the rule of translation between the objects of different levels. According to this method of construction, objects of each level are constructed from the objects of the lower levels. By means of reducing one object to the other, all objects of the constructional system at the end are constructed from objects of the first level (Carnap 1928: 6). Carnap discusses this transition process from one level to another as “ascension forms” (Carnap 1928:47).

In part three of the *Aufbau*, Carnap formulates four different problems in order to construct the system of rational reconstruction. These are formal problems of constitution theory, namely; the ascension forms, the system forms, the basis, the object forms and the forms of representing a constitution system. The ascension forms are the most important ones in understanding how this construction method works and where the definitions play a role. As Carnap writes:

The construction of an object must be given in the logical form of a definition: every object to be constructed will be introduced through its constructional definition either as a class or as a relation extension. Thus, in each step within the constructional system, one of these two forms will be produced. They are the *ascension forms* of the constructional system.

Others are not required (Carnap 1928: 12, emphasis added).

That is to say, when a concept is carried to another level of construction system, it must be in the definition form. In other words, transformation of concepts occurs via definitions. In section entitled “Construction Takes Place Through Definition”, Carnap discusses how ascension forms function (Carnap 1928: 65). Accordingly, each scientific object can be transformed to a ‘definition’. There are two kinds of definitions; an “explicit definition” and “the definition in use”. In an explicit definition, which is mostly used in simpler cases, the new object directly defines the previous objects itself. However, in the definition in use, we do not have the direct definition of the concept, but we know only its function in a sentence. The definition in use is a secondary option when explicit definition is not possible (Carnap 1928: 66-67).

It is striking that the construction has to proceed via explicit definitions and I want to look briefly at why definitions are important for the method of rational reconstruction. In the construction system, Carnap aims to construct a single formal language so that the concepts within the object language can be translatable into that formal language. In other words, Carnap does not merely aim to clarify the concepts within the language, but he wants to transform them into the metalanguage by means of logical expressions. The former attempt, namely explaining the concept within the language it is used is an already known and welcomed venture. For instance, R.M. Hare (1952) develops a moral language within the scope of ordinary language. He then develops a method of prescriptive inference by analyzing the sentence of ordinary language in terms of its prescriptive components. Namely, he introduces a specific framework into the language (A. W. Carus 2003: 27).⁵ However, Carnap does not attempt to develop a framework *in* the ordinary language, instead he attempts to construct a framework outside of the ordinary language, which is the domain of logical symbols. Since we are not at the space of ordinary language, there is a question of how to translate or transform ordinary language into purely formal

⁵ For instance, R.M. Hare (1952) develops a moral language within the scope of ordinary language. He then develops a method of prescriptive inference by analyzing the sentence of ordinary language in terms of its prescriptive components. Namely, he introduces a specific framework into the language (A. W. Carus 2003: 27).

statements. Therefore, the nature of the relation between explicandum and explicatum needs to be investigated. In the *Aufbau*, definition plays a crucial role in this relation. A concept in the object language must be *defined* in order to be expressible in a metalanguage.

Carnap himself admits later on that his attempt in the *Aufbau* to logically construct a higher order language based on a phenomenistic language was a failure. One of the reasons for this failure is due to the requirement of explicit definitions. The significant change in Carnap's understanding of constructional system occurs here: He realizes that the translation of higher-level objective concepts to lower-level phenomenal ones cannot always take the form of explicit definitions. He notices that more liberal forms of concepts must be introduced. That is why he revises his views about the use of definitions in the method of rational reconstruction. As he explains in the preface to the second edition:

The positivist thesis of the reducibility of thing concepts to autopsychological concepts remains valid, but the assertion that the former can be defined in terms of the latter must now be given up and hence also the assertion that all statements about things can be translated into statements about sense data (Carnap 1961: VIII).

As we see in his later works, Carnap becomes aware that philosophical concepts cannot be defined but only explicated. Therefore, he gives up on rational reconstruction project and replaces it with the method of explication. In the third and the final section of this chapter, I discuss why method of philosophy cannot be based on definitions. Before that discussion, however, in the following section, I look at how Carnap develops the method of explication in one of his late works, *Logical Foundations of Probability* (1950a) and how this new method of explication differs from the old version, i.e., rational reconstruction in terms of its treatment of definitions.

1.2. Logical Foundations of Probability (1950a)

As it is seen in the previous section, Carnap gives up on the aim of finding explicit definitions, but this does not mean he abandons his main objective completely.

Carnap always aims to explicate the concepts in order to avoid the linguistic confusion. However, the way that he does this shows variety and development. In the method of rational construction, explication of concepts required explicit definitions. Whereas, later on he adopts the method of explication, where explicatum does not need to reach full exactness and definition. For Carnap, even if we cannot attain full exact explicatum instead of explicandum, we must try to formulate it in the best exact way. As he explains in the *Logical Foundations of Probability*:

[S]ince even in the best case we cannot reach full exactness, we must, in order to prevent the discussion of the problem from becoming entirely futile, do all we can to make at least practically clear what is meant as the explicandum. [...] It seems to me that, in raising problems of analysis or explication, philosophers very frequently violate this requirement. They ask questions like: 'What is causality?', 'What is life?', 'What is mind?', 'What is justice?', etc. Then they often immediately start to look for an answer without first examining the tacit assumption that the terms of the question are at least practically clear enough to serve as a basis for an investigation, for an analysis or explication. Even though the terms in question are unsystematic, inexact terms, there are means for reaching a relatively good mutual understanding as to their intended meaning (Carnap 1950: 4).

Here we see that Carnap takes a more modest standpoint in his approach to philosophical concepts. In his later works, he already accepts that attaining full definitions of concepts is not possible. However, he argues that we should try our best in explicating those concepts even if we cannot explicitly define them.

Unlike in the method of rational reconstruction, the function of explicatum (the new more exact concept) is not to give the whole meaning or definition of explicandum (old concept).⁶ Instead, explicatum needs to meet some other requirements such as

⁶ For instance, Carnap gives the example of the term 'fish' in the following: "Let us consider as an example the prescientific term 'fish'. In the construction of a systematic language of zoology, the concept Fish designated by this term has been replaced by a scientific concept designated by the same term 'fish'; let us use for the latter concept the term 'piscis' in order to avoid confusion. When we compare the explicandum Fish with the explicatum Piscis, we see that they do not even approximately coincide. The latter is much narrower than the former; many kinds of animals which were subsumed under the concept Fish, for instance, whales and seals, are excluded from the concept Piscis. [The situation is not adequately described by the statement: 'The previous belief that whales (in German even called 'Walfische') are also fish is refuted by zoology'. The prescientific term 'fish' was meant in about the sense of 'animal living in water'; therefore, its application to whales, etc., was entirely

similarity to the explicandum, exactness, fruitfulness, and simplicity (Carnap 1950: 1). For the similarity requirement, we cannot expect a very strong similarity between explicandum and explicatum since there is no direct correspondence between them. However, we should be able to use explicatum in every place which explicandum is used. Regarding the exactness criteria, Carnap is aware that explication fundamentally cannot have the same exactness as scientific problems since in the latter the datum and the solution can be formulated in exact terms while this is not possible for the former. However, we must try to achieve best possible exactness in order to prevent a complete meaningless discussion of the problem. The third criterion of explicatum is fruitfulness, which implies the connection of explicatum to the other concepts.

A scientific concept is the more fruitful the more it can be brought into connection with other concepts on the basis of observed facts; in other words, the more it can be used for the formulation of laws (Carnap 1950a: 6).

In other words, the explicated concept, i.e., the explicatum, must be relevant to other concepts. Considering Carnap's aim of unified science, the connection between the different scientific concepts are very important.

The fourth and the last criterion is simplicity which is not at the primary importance compared to previous criteria. We see that many scientists do not use simple terms but rather complicated ones if they are more useful or fruitful. If there are simpler but equally fruitful concepts, then simplicity comes into play as a next criterion and the simplest concept would be a better choice. Namely, a concept must be simple as much as similar, exact and fruitful.

correct. The change which zoologists brought about in this point was not a correction in the field of factual knowledge but a change in the rules of the language; this change, it is true, was motivated by factual discoveries.] That the explicandum Fish has been replaced by the explicatum Piscis does not mean that the former term can always be replaced by the latter; because of the difference in meaning just mentioned, this is obviously not the case. The former concept has been succeeded by the latter in this sense: the former is no longer necessary in scientific talk; most of what previously was said with the former can now be said with the help of the latter" (Carnap 1950: 5-6).

So far, we saw that Carnap uses the method of rational reconstruction in the *Aufbau* in order to construct a scientific language out of phenomenal language. This method relies on explicit definitions. On the other hand, the method of explication he presents in *Logical Foundations of Probability* (1950a) has the criteria of the similarity to the explicandum, exactness, fruitfulness, and simplicity. Even though the early form of the method of explication, namely rational reconstruction is very similar to the method explication and they are mostly used interchangeably, there is a remarkable difference between them in terms of the relation between explicandum and explicatum. While the method of rational reconstruction requires explicit definitions of concepts, the method of explication requires a different set of criteria for transformation of the unscientific and less clear concepts to clearer scientific concepts, such as similarity, fruitfulness and simplicity instead of definition.

Having explained the differences between the method of rational reconstruction and explication, let us now focus the roles of definitions in the method of philosophy. In the next section I further elaborate why methods of philosophy that require explicit definitions cannot work. In order to provide a different perspective on this issue, let us know examine Kant's views on use of definitions, which will help us understand why both empirical and philosophical concepts cannot be defined fully. This can only help us understand Carnap's shift from definition to explication of concepts.

1.3. Kant on Definitions

According to Kant, "to define, as the term itself yields, is in fact intended to mean no more than to exhibit a thing's comprehensive concept originally within its bounds" (CPR: 678 (A728/B756)). In other words, giving a definition of a concept means to limit the concept in question with certain characteristics. However, Kant thinks that we can only explicate an empirical concept, but we cannot define it at all because a designating word for the empirical concept cannot correspond to each characteristics and features of that concept.⁷ While constructing empirical concepts, for instance, in

⁷ As Kant write in the first *Critique*, "For since in such a concept we have only some of the characteristics belonging to a certain kind of objects of the senses, we can never be sure whether by the word designating the same object we do not sometimes think more and sometimes fewer of the

the concept of *gold*, one person may think about the property of gold as not rusting other than the property of weight, color, and ductility. Thus, “gold” can be defined very differently by different people as they all limit the concept differently from each other. The problem with defining empirical concepts is, he argues, through observation it is always possible that certain characteristics are removed and others are added to the concept. For instance, when we think about water and its properties, it is not the word *water* we focus on, since the word *water* is only the designation:

The word, with the few characteristics attaching to it, is to amount merely to a *designation* of the thing, not to a concept of it. Hence the alleged definition of water is nothing but a determining of the word. Thus, empirical concepts cannot be defined but can only be spelled out [expliziert in German] (CPR: 678 (A728/B756)).

Kant provides a few more reasons to show that empirical concepts cannot be defined. One of the reasons for this is the difference between philosophy and mathematics. For Kant, only mathematics has definitions since its concepts are a priori and its object can contain neither more nor less than the concept. Kant explains why definitions cannot work in philosophy as it does in the mathematics:

Philosophical definitions are brought about only as expositions of given concepts, but mathematical definitions as constructions of concepts made originally; philosophical definitions are brought about only analytically through the concepts' dissection (whose completeness is not apodictically certain), whereas mathematical definitions are brought about synthetically; and thus, mathematical definitions themselves *make* the concept, whereas philosophical definitions only *explicate* it. (CPR: 681 (A730/B758)).

In other words, the boundary of mathematical concepts is determinate, whereas we cannot put a limit on the boundaries of empirical concepts since they can always be expanded by the new observations. Based on this difference between philosophy and mathematics, Kant concludes that we should not imitate the method of mathematics in philosophy as we cannot give definitions in advance. As Kant points out:

In philosophy one must not imitate mathematics by starting from a

object's characteristics” (CPR: 678 (A728/B756)).

definition--except perhaps as a mere attempt. For since the definitions are dissections of given concepts, the concepts, though still confused, precede the definitions; and the incomplete exposition precedes the complete one. Thus, once we have drawn some characteristics from a still uncompleted dissection, we can infer from them various details in advance, before we have reached the complete exposition, i.e., the definition. In a word, in philosophy the definition, as involving rigorous distinctness, must conclude rather than begin the work (CPR: 681 (A731/B759)).

The fact that mathematics rests on definitions, axioms, and demonstrations makes defining and analyzing its concepts possible. However, in philosophy, we cannot start with definitions since there are no established definitions of concepts at the beginning, we can only hope to reach them at the end of our investigation. Therefore, unlike mathematical method which makes use of definitions, in philosophy methods that require definitions cannot work.

What if the methods of mathematics are applied to philosophy? According to Kant, mathematical methods provides “nothing but houses of cards” and he concludes that:

Pursuing the mathematical method in this kind of cognition cannot provide the slightest advantage-unless it were the advantage of exposing all the more distinctly the weak sides of the method itself. And we must show that mathematics and philosophy are two quite different things (although in natural science they offer their hands to each other) and that therefore the procedure of the one can never be imitated by the other. (CPR: 678 (A726/B754)).

As we see here, Kant is very strict in differentiating the methods of philosophy from the methods of mathematics. The main reason is that while in mathematics concepts are constructed a priori and it is possible to start with definitions, we cannot start with the definitions in philosophical investigations. Therefore, using definitions in philosophy in the same way with mathematics is problematic for Kant.

However, it should be noted that this difference between philosophy and mathematics that Kant mentions does not necessarily the reason for Carnap to give up on defining the concepts. I include Kant’s perspective on definition just to elaborate more on why the definition requirement turns out problematic in early

Carnap. Even though late Carnap gives up on definitions, he never gives up on his aim of application of logic to philosophy. Nevertheless, renunciation of rational reconstruction model of early Carnap paved a way for the explication model of late Carnap.

Even if Carnap makes the transition from definition to explication for some other reasons, this transition still shows the indefinability of empirical concepts, otherwise he would not give up on it. In the rational reconstruction model, early Carnap aims to establish a formal, syntactical language so that the concept in the object language can be translatable into that formal language. If the explicandum (the first concept that is going to be explicated) have a certain definition, then it would be easier to translate it in a syntactical way in the metalanguage. However, this turns out an unsuccessful attempt. I argue that the reasons that Kant gives about the indefinability of philosophical concepts provides a helpful insight to understand this failure.⁸ Therefore, I claim that the failure of defining the concepts in philosophy indicates also the failure of the application of mathematics' formal approach in philosophy. This failure paves the way for Carnap to take a humbler attitude towards the philosophical concepts. By preferring explication over definition, he bends the strict understanding of formal methodology of philosophy for the first time. As we will see in the next chapters, Carnap would also give up on the mere syntactical metalanguage and adds semantics, and accepts the possibility of multiple language frameworks instead of single formal language.

⁸ Giovanni Boniolo (2003) compares Kant's explication and Carnap's explication and argues for the superiority of the former over the latter as the right method of philosophy. However, he disregards the difference between early Carnap and late Carnap on the method of explication, therefore, I do not think his criticism really captures the main problematic aspect of Carnap's method of philosophy.

CHAPTER 2: FROM SYNTAX TO SEMANTICS: CARNAP'S SEMANTIC TURN

In the previous chapter, I investigated the decrease in the formal aspect of method of *rational reconstruction* and how it eventually evolves into the method of explication. Other than *rational reconstruction*, Carnap uses the term of *logical analysis* for the method of philosophy in one of his early work, *Philosophy and Logical Syntax*. Carnap develops a method of logical analysis which is concerned with the syntactical treatment of language, and thereby, it only deals with the “form of expressions” (Carnap 1942: 10). In other words, the method of logical analysis is purely syntactical, therefore only related to the formal part of language.

However, he incorporates semantics to his initially purely formal methodology in the *Introduction to Semantics* (1942). As the title asserts, Carnap introduces semantics into his syntactical method and consequently expands the scope of the methodology of philosophy from *logical analysis (or rational reconstruction)* to the *semiotical analysis (or explication)*. The transition from syntax to semantics has many implications in terms of the method of philosophy.

In this chapter, I will investigate Carnap's transition from syntax to semantics. This chapter has four sections. First, I will look at *Philosophy and Logical Syntax* (1935) to give a general outline of Carnap's syntactical project. Carnap introduces logical analysis as the methodology of philosophy in *Philosophy and Logical Syntax* (1935).⁹ The method of logical analysis is purely syntactical, therefore only related to

⁹ A much more detailed account of Syntax can be found in *Logical Syntax of Language* (1937). Nevertheless, I only focused on *Philosophy and Logical Syntax* (1935) while it also includes Carnap's more general views about philosophy and why Syntax is crucial for philosophy rather than the technical details of the application of Syntax.

the formal part of language. However, this formalist approach of Carnap changed later by the addition of semantics. In the second section, I will focus on Carnap's semantics. There is a considerable disagreement on the question of whether Carnap's conception of semantics is formal or not. In order to illustrate Carnap's understanding of semantics in a detailed manner, I first examine how Carnap introduces semantics in *Introduction to Semantics* (1942). After that, I look at the exchange between Carnap and Everett Hall-Gustav Bergmann, which is about the characteristics of semantics, i.e., whether it is formal or non-formal.

In the third section, after investigating *Philosophy and Logical Syntax* (1935) from early Carnap and *Introduction to Semantics* (1942) from late Carnap, I will try to understand why Carnap felt the need to include semantics so that his conception of philosophical methodology changed.

In the fourth and last section, I examine different views on whether Carnap's semantic turn is a dramatic shift or not. While Richard Creath considers the addition of semantics as a continuation of Carnap's syntactical project and argues that there is no significant change from syntax, Otto Neurath strongly rejects the inclusion of semantics as he thinks that it is a radical break from syntax.

2.1. Philosophy and Logical Syntax (1935)

Philosophy and Logical Syntax is not only important to see the formal language Carnap proposes but also to comprehend Carnap's general conception of philosophy. I will start with Carnap's understanding of philosophy and continue with its specific task to reflect Carnap's syntax period.

In his *Philosophy and Logical Syntax*, Carnap distinguishes three different types of philosophical doctrines; namely Metaphysics, Psychology and Logic. For Carnap, metaphysical sentences are meaningless because they cannot be verifiable empirically. If they can, then they belong to the empirical science, not to philosophy. In other words, since metaphysical questions lack empirical content, they are pseudo questions and do not have any sense (Carnap 1935: 5-7). For instance, Carnap assigns ethics to the field of metaphysics and considers the statement of "killing is

evil”. Even though this statement is in the assertive form, it is neither true nor false, neither proved nor disproved. Namely, Carnap does not mean metaphysical statements, including ethical ones, are true or false, they are just meaningless for the lack of empirical content. Moreover, Carnap asserts that metaphysics is similar to lyrics, poems in terms of not providing any theoretical knowledge, therefore belongs to art, not to philosophy.

After eliminating metaphysics from the domain of knowledge, Carnap focuses on psychology and eliminates it “not from the region of knowledge, but from philosophy” (Carnap 1935: 11). The reason why Carnap separates psychology from philosophy is that its statements are verifiable and therefore it is an empirical science just as chemistry and physics. Moreover, its questions can only be answered by experience not by philosophizing.

By eliminating metaphysics and psychology from philosophy, Carnap aims to reduce philosophy to logic and he determines its task, actually its only task, as *logical analysis* (Carnap 1935a: 12.). According to Carnap, his aim of logical analysis only concerns with the last component, logic. Carnap’s conception of philosophy is very atypical concerning how philosophy is understood in the traditional sense. For Carnap, philosophy must be applied logic and its only task is logical analysis.

What is logical analysis? What kind of sentences are those that express the results of logical analysis? My answer — as I have already indicated — will be that they are syntactical sentences, sentences of logical syntax, and that philosophy is thus the application of the syntactical method (Carnap 1935:24).

What he means by the application of syntactical method is to analyze all knowledge, whether it is from science or everyday life, to make them as clear as possible. The type of analysis in the *logical analysis* for Carnap, is the syntactical treatment of the language, which he also calls as the “logic of language”. The application of logical syntax to the whole language is very crucial for Carnap since he wants to reconstruct the language in a formal, scientific, clear and exact way:

One of the principal tasks of the logical analysis of a given
{proposition}org {statement} is to find out the method of verification for

that {proposition} {statements} [...] The aim of logical syntax is to provide a system of concepts, a language, by the help of which the results of logical analysis will be exactly formulable. Philosophy is to be replaced by the logic of science – that is to say, by the logical analysis of the concepts and sentences of the sciences, for the logic of science is nothing other than the logical syntax of the language of science (Carnap 1935: 3).

It is obvious from here that for Carnap, philosophy equals with the logic of science, which means the logical syntax of the language of science. The importance of logic for Carnap lies in its precision and determinacy which provides an objective tool to rescue philosophy from the endless metaphysical disputes. By applying logic to language, Carnap aims to create a formal tool for philosophy to analyze statements free from the metaphysical or ontological commitments. That is why Carnap offers logical analysis as a philosophical methodology.

It is striking here how the scope of philosophy is restricted merely to formal domain based on the verifiability criteria, at least in the early Carnap. For Carnap, if prepositions or considerations are without reference to meaning, then those linguistic assertions are formal. For instance, a formal investigation of a sentence has nothing to do with the meaning of the words or sentences. This formal investigation or logical analysis as Carnap calls, only concerns with the formal structure of the sentence such as the order in which words follow one another or the kinds of the words in that sentence. To illustrate this, Carnap gives an example of the sentence: “The book is black.” He says that:

If I assert that this expression consisting of four words is a sentence, and further, that the first word is an article, the second a substantive, the third a verb, and the fourth an adjective, all these assertions are formal assertions. If, however, I assert that that sentence concerns a book, or that its last word designates a {colour}^{org} {color}^{var}, then my assertions are *not formal*, because they have to do with the *meaning* of the words (Carnap 1935a: 13).

This passage shows that Carnap gives importance only to syntax, the formal part of the language, and the non-formal part, namely semantics, is intentionally left out. This distinction between the formal part of the language and the non-formal part of the language stems from Carnap’s rejection of Wittgenstein’s picture theory of

meaning. As Carnap mentions in his *Philosophy and Logical Syntax* (1935), for Wittgenstein, every prepositions or statements including his owns, as meaningless as the metaphysical statements (Carnap 1935a: 13). Carnap introduces his formal theory of language just after he discusses why he disagrees with Wittgenstein. According to Carnap, logical analysis saves certain philosophical statements from falling into meaningless metaphysical disputes. Logical analysis is not only a possible tool but also the only proper task of philosophy (Carnap 1935a: 12). For Carnap, it is essential to express non-formal statements in the formal-language, which is superior to ordinary language due to its exactness.

2.2. Carnap's Semantics (1942)

In the previous part, we see that early Carnap gives importance only to logical syntax, which is the only task of philosophy. However, late Carnap indicates that logical syntax should be later supplemented by semantics. That is why, Carnap's syntactical project needs to be reconsidered from the perspective of semantics. However, the characteristics of Carnap's semantics is controversial. In order to investigate Carnap's semantics more closely, I first examine *Introduction to Semantics* to see which revisions he makes after the addition of semantics. After that, I move on to the debate between Carnap and Everett Hall-Gustav Bergmann over the characteristics of semantics.

2.2.1. Introduction to Semantics (1942)

In the *Introduction to Semantics* (1942), Carnap discusses how some of the ideas that he developed in *Logical Syntax* changed:

The modifications which the views explained in my earlier book [Syntax] have to undergo, especially in view of semantics, are here indicated. Most of the earlier results remain valid. But certain concepts, especially the L-concepts, are now regarded as semantical, not syntactical; hence, the earlier attempts at syntactical definitions for them are abandoned. Many of the earlier discussions and analyses are now seen to be incomplete, although correct; they have to be supplemented by corresponding semantical analyses. The field of theoretical philosophy is no longer restricted to syntax but is regarded as comprehending the

whole analysis of language, including syntax and semantics and perhaps also pragmatics (Carnap 1942: 246).

Note that, the addition of semantics and pragmatics, according to Carnap, should not be interpreted as the abandonment of syntax project. Instead, the addition simply means broadening of the Carnap's main project. He states that his whole thesis is changed by the addition of semantics; the task of philosophy is now "semiotical analysis", not merely the "logical (syntactical) analysis". (Carnap 1942: 250).¹⁰ While the method of logical analysis includes only syntax in the early Carnap, semiotical analysis involves not just syntax, but also semantics and pragmatics in late Carnap:

In Syntax, it was asserted that an analysis of language is either formal, and hence syntactical, or else psychological. Today I would say that, in addition to these two kinds of analysis (the second is what is now called pragmatical), there is the possibility of semantical analysis (Carnap 1942: 249).

Inspired by C. Morris' earlier distinction, Carnap states that there are three components of a complete theory of language (semiotics) which includes syntax, semantics and pragmatics. Accordingly, in the case of syntax, what is dealt with is only the expression, neither speaker nor designata. Semantic refers to when there is no explicit reference to the speaker but only the designata. Finally, pragmatics refers to an investigation of a language in which an explicit reference to a speaker is made. These three parts constitutes the science of language, which is 'semiotics'. (Carnap 1942: 9).

According to Carnap, syntax consists of two different kinds; descriptive and pure syntax. Descriptive syntax is "the empirical investigation of the syntactical features of given language" (Carnap 1942: 12). However, pure syntax deals with only syntactical systems and rules. Carnap makes an analogous distinction in the field of semantics. Accordingly, there are two different kinds of semantical investigations

¹⁰ Carnap explicitly states that: "Thus, the whole thesis is changed to the following: the task of philosophy is semiotical analysis; the problems of philosophy concern – not the ultimate nature of being but – the semiotical structure of the language of science, including the theoretical part of everyday language" (Carnap 1942: 250).

that are pure and descriptive semantics. By descriptive semantics, Carnap means “the empirical investigation of the semantical features of historically given languages”. On the other hand, pure semantics is “the analysis of semantical systems” and “system of semantical rules”. Contrary to descriptive semantics, pure semantics is analytic and independent of factual content (Carnap 1942: 12).

Descriptive parts, both in syntax and in semantics, belong to the field of linguistics since it concerns with the empirical investigation. Moreover, pragmatics is “the basis for all linguistics”, therefore descriptive parts depend on pragmatics (refers to the user of the language). However, pure syntax and semantics are independent of pragmatics since they are only concerned with the rules of the language (Carnap 1942: 13).

In order to determine whether semantics, according to Carnap, is formal or not, we need to be clear on what Carnap means by semantics. Carnap emphasizes that pure semantics does not include factual assertions (Carnap 1942: 12). This might be very counter intuitive because semantics is considered to be about meaning. However, Carnap is not interested in meaning *per se*, he is interested in the “logic of meaning” or as he calls it “pure semantics”. Unlike descriptive semantics, pure semantics consists of set of rules such as rules of formation, rules of designation and rules of truth (Carnap 1942: 24). However, the division between descriptive and pure semantics is not clear enough to understand what exactly Carnap deals with. Since pure semantics is still about various types of rule to the great extent, one might take to be as formal as syntax, which is basically all about grammatical rules of language. Nonetheless, scholars disagree on the nature of Carnap’s conception of semantics and the extent to which it is formal. In what follows, I will first explain the debate over the characteristics of Carnapian pure semantics and then argue that Carnap’s semantics is not formal and that is precisely why he felt the need to incorporate semantics into his initially formalistic method of philosophy.

2.2.2. The Debate Over The Characteristics of Carnapian Semantics

In this part, I will focus on the debate over the question of whether Carnap’s conception of semantics is formal or not. While there is no controversy about the

relation of syntax to the formal part of the language, there is a considerable debate over nature of pure semantics. Accordingly, semantics is either formal just as syntax or non-formal contrary to syntax.

Before I examine the discussion over semantics between Hall and Carnap to shed light on the nature of Carnapian semantics, however, it is important to get clear on the term “formal” in this context. Carnap states that:

The representation of certain concepts or procedures in a formal way and hence within syntax is sometimes called formalization [...] An investigation, a method, a concept concerning expressions of a language are called formal if in their application reference is made not to the designata of the expressions but only to their form, i.e. to the kinds of signs occurring in an expression and the order in which they occur. Hence anything represented in a formal way belongs to syntax (Carnap 1942: 10-11).

In other words, according to Carnap, formal is all about the form and not the content. For instance, in the syntax of language, the order of the words is important, not the words themselves, therefore the content is irrelevant. Here Carnap easily matches syntax with formal, however, he does not make the same matching between semantics and formal. That’s exactly where the confusion stems from.

The addition of semantics to the logical analysis project is a controversial issue in terms of whether it is an expansion or regression of Carnap’s formalization. What does exactly the embracement of semantics imply? Does it make Carnap’s formal language less formal or it just enriches Carnap’s formalization project? It all depends on how semantics is interpreted.

In *Introduction to Semantics* (1942), Carnap makes a distinction between pure semantics and descriptive semantics. According to him, he only deals with the former one (pure semantics) as the latter one (descriptive semantics) belongs to

linguistic. The actual characteristics of pure semantics, however, is a matter of controversy.

In his paper “Hall and Bergmann On Semantics”, Carnap addresses the criticism of Everett Hall and Gustav Bergmann about his semantic theory. Carnap outlines some of the criticism, which he thinks ‘just the opposite of my conception of semantics’ (Carnap 1945: 149). Firstly, according to Everett Hall and Gustav Bergmann, Carnap’s semantics does not contain any extra-linguistic properties since formally articulated rules cannot refer to extra-linguistic objects. The rules of Carnap’s semantics only works intra-linguistically, but they cannot establish the relation of linguistic expressions to their referents in the world.

According to Hall, Carnapian semantics only function within linguistic framework just as Carnapian syntax and does not have correspondence within the world (Hall 1944: 27). For instance, regarding the rules of designation, “‘a’ designates Chicago”, is a meta-linguistic relationship between the name of an expression and the expression itself. Therefore, it is not a relationship between expressions and extra-linguistic objects or properties.

In his response to the criticisms of Bergman and Hall, Carnap explains that their confusion stems from the misreading of rules of designation. Accordingly, they confuse ‘use of an expression’ with ‘reference to an expression’ (Carnap 1945: 153). Because of this confusion, Hall assumes that a designation is a relation between two expressions. For instance, in the example of “‘a’ designates Chicago”, Bergmann and Hall consider that the term “Chicago” refers to the expression “Chicago”, not the real city “Chicago”. This led them think that “‘a’ designates Chicago” is showing merely the relation between an expression and the name of an expressions.¹¹ In other words,

¹¹ Carnap concludes that “My remarks on Hall's and Bergmann's papers may be summed up as follows.

(a) The two authors fail at some crucial points to make the necessary distinction between use and mention of an expression, in other words, between an expression and -its name.

(b) Consequently, they interpret what I say about rules of designation as if the expressions used in these rules were expressions mentioned; thus, they come to the erroneous conclusion that the designatum is always an expression.

(c) Consequently, they believe erroneously that pure semantics does not refer to extra-linguistic matter” (Carnap 1945: 155)

for Bergmann and Hall, the rule of designation is merely a relation between signs, not a relation between a sign and a thing, which is a misconception.

Carnap also indicates that their understanding of pure semantics contradicts with Carnap's explicit reference to extra-linguistic properties, he even states that he is surprised at such a misunderstanding (Carnap 1945: 148-149). Carnap's befuddlement is totally understandable since he explains very clearly that he includes extra linguistic reference:

I have especially emphasized its distinction from syntax (Morris' "syntactics"); while the latter discipline deals only with relations among expressions in a language and thus with an entirely intra-linguistic subject-matter, *it belongs to the essential characteristics of semantics that it refers not only to language but also to extra-linguistic matter* (Carnap 1945: 148).

This debate reveals that one of the most significant discriminating aspects of Carnapian semantics from syntax is the fact that Carnapian semantics is not working merely within the language as syntax does. This feature is a critical point to see the non-formal characteristics of semantics. Recall that, for Carnap, an investigation or a method formal if in their application reference is made not to the designata of the expressions but to the signs of the expressions (Carnap 1942: 10). However, since semantics includes extra linguistic elements, we make reference to designate of the expressions. Carnap specifically emphasizes that pure semantics works with the extra-linguistic reference, which means that it requires a relation between sign and the thing in the world. That means, the term 'Chicago' is not just a linguistic expression, it refers to the actual city Chicago. This feature of Carnap's pure semantics makes it impossible to call pure semantics 'formal', at least in the way that Carnap defines formal (without reference to designata).

Carnap explicitly rejects to categorize his pure semantics as formal when Gustav Bergmann claims, "Meta-languages of the kind [...] are called semantical metalanguages. Pure semantics is the study of such metalanguages formally considered" (Bergman 1944: 246). Carnap is very clear in his response to Bergmann, "I should prefer to say that pure semantics is the study of object languages, not of metalanguages, and further, that it is not a formal study but a study of interpretation"

(Carnap 1945: 154). In other words, Carnap states that his pure semantics is not a formal study, rather it is the ‘study of interpretation’. By pure semantics, Carnap does not mean a formal or formalization of semantics as it is assumed.

However, Bergmann and Hall’s misconception may stem from the fact that Carnap uses the term ‘interpretation’ differently in his syntax period.¹² While ‘interpretation’ in Carnap’s syntax period is a formal activity within the logical syntax,¹³ whereas, in the semantic period, interpretation is redefined as the kind of activity that cannot be formalized (Carnap 1943: 4).¹⁴

Their discussion over the characteristics of Carnap’s pure semantics indicates that Carnap’s pure semantic is not a formal theory for two reasons. First, Carnap’s pure semantics includes extra linguistic referent, it is not a relation just a between two linguistic signs; it involves a real object within the world which the term designates to. Second, it is not a formal study but a study of interpretation, which cannot be formalized according to late Carnap. In fact, Carnap explicitly states that the task of the formalization of any theory, i.e. of its representation by a formal system or calculus, belongs to syntax, not to semantics (Carnap 1942: VII). Therefore, we can conclude that the addition of semantics, regarding its non-formal aspects, demonstrates a decrease in the formal aspect of Carnap’s method of philosophy. Early Carnap’s method of logical analysis, which is a mere formal syntactical method, transforms into a semiotical analysis which includes both syntax and semantics. In other words, late Carnap’s method of explication, which makes use of

¹² In Logical Syntax, he states that: Interpretation of a language is a translation and therefore something which can be formally represented; the construction and examination of interpretations belong to formal syntax” (Carnap 1937: 228).

¹³ “Interpretation of a language is a translation and therefore something which can be formally represented; the construction and examination of interpretations belong to formal syntax” (Carnap 1937: 228).

¹⁴ For detailed discussion, see Olen (2017). According to Peter Olen, the reason for Bergman and Hall’s misunderstanding of Carnap is the fact that they consider Carnap from the perspective of his syntax period. In other words, their confusion stems from evaluating some of the terms only from the perspective of Carnap’s syntax period without taking into the transformation Carnap has gone through in the semantic period (Peter Olen 2017: 10).

semiotical analysis, shows fewer formalist characteristics compared to his previous mere syntactical project.

2.3. Carnap's Move From Syntax to Semantics: Why Semantics is Incorporated?

We have seen the formal characteristics of early Carnap's syntax and the non-formal characteristics of late Carnap's semantics in the previous parts. As we discussed, Carnap's conception of scientific philosophy is equals with the logical syntax of language. Semantics, on the other hand, is intentionally refused for providing a way to metaphysical speculations. Early Carnap's insistence on syntax actually stems from the rejection of Wittgenstein's theory of meaning. By embracing purely formal, syntactical framework, Carnap tried to construct a safe language field that is free from meaning problem. In other words, "the formal mode of speech" as opposed to "material mode of speech" was an avoidance of meaning and this constitutes an important part of early Carnap's works. Carnap is actually very clear and plain in explaining his syntax project. He is content with what he suggests as scientific language: a very precise, non-interpretive and exact language that rules out metaphysical dispute and provides a concrete tool for philosophy just as another sciences. However, it did not last long. Carnap soon realized that the method of philosophy, rational reconstruction/explication, needs to have semantics and pragmatics aspect as well. Why Carnap turns to semantics after his strict emphasis on syntax then? He points out that:

A few years after the publication of the book, I recognized that one of its main theses was formulated too narrowly. I had said that the problems of philosophy or of the philosophy of science are merely syntactical problems; I should have said in a more general way that these problems are metatheoretical problems (Carnap 1963: 56).

As I argued, the addition of semantics is not a renunciation of syntax project but rather an evolvment of Carnap's project by the addition of non-formal account of language; semantics and pragmatics. In other words, syntax is not replaced by semantics, it is compensated with the semantics. The problem was not the syntactical method itself, but Carnap's strict formalist approach that claims the sufficiency of syntax by itself as a method of philosophy. The involvement of semantics implies

that the previous Carnap's conception of philosophical methodology, which is constituted only by formal syntactical language, was not by itself adequate for the purpose of philosophy and that semantics is also needed. Since the formal methodology by itself is not sufficient for the method of philosophy, Carnap felt the need to add non-formal parts of the language.

What exactly missing in the syntax and how exactly semantics fills this void? This is also the core problem that we need to address in order to comprehend Carnap's main concern: a proper methodology of philosophy and a true way of analyzing the statements of science. To see the picture clearly, we need to look at Tarski's effect on Carnap since he is the main factor in Carnap's semantic turn.

Tarski plays a significant role in Carnap's transition to semantics. Carnap gave up avoiding semantics after he accepted Tarski's new semantical accounts of designation and truth. In his *Intellectual Autobiography*, he explains how he was surprised when he heard semantics from Tarski for the first time:

When Tarski told me for the first time that he had constructed a definition of truth, I assumed that he had in mind a syntactical definition of logical proof or provability. I was surprised when he said that he meant truth in the customary sense, including contingent factual truth. Since I was thinking only in terms of a syntactical metalanguage, I wondered how it was possible to state the truth-condition for a simple sentence like 'this table is black'. Tarski replied: "This is simple; the sentence 'this table is black' is true if and only if this table is black" (Carnap 1963: 60).

Carnap welcomed semantics after his contact with Tarski. But what exactly changed after Tarski? Why he embraces semantics after all those strict emphasis on the uniqueness of syntax? In his *Truth and Confirmation* (1949), Carnap tells how Tarski's concept of truth changed his early understanding of truth. He states that the concept of truth is generally avoided by the logicians since its use in ordinary language leads to many paradoxes (such as liar paradox). Therefore, it is thought that it is impossible to give an exact and consistent definition of truth. This leads to understand the concept of truth from entirely different perspective: now "true" is understood same with "confirmed" (Carnap 1949: 119). A.W. Carus also indicates that the concept of truth was problematic during the syntax period (not just for

Carnap but for the Vienna Circle in general), simply because it is understood same as confirmation. Carus says that if for the members of Vienna Circle the concept of truth means that “empirically certain” or “conclusively verified”, then it is very problematic since the empirical confirmation is always incomplete (Carus 1999: 20). Therefore, the members of Vienna Circle generally avoided using the concept of truth. This is all to say, the concept of truth means confirmation and verification for the members of Vienna Circle and for the early Carnap. Understanding the concept of truth in this way (as confirmation) problematic because scientific statements are hypothesis and they cannot be verified for a certain, there is no way to talk about the concept of truth within syntax. The concept of truth belongs to semantics and it should be rejected.

Moreover, syntax has nothing to do with the empirical realm; there is no relation between the words and the world within syntax, it is all about language and functions within the framework of language. In order to confirm a sentence or any scientific statements, a relation between the linguistic term and fact must be established, but syntax rejects this relation. Carnap was aware of this problematic aspect of syntax and points out that:

Our thesis that all logic of science is syntax should not be misunderstood to mean that the task of the logic of science could be addressed without reference to empirical science and its empirical results... All work in the logic of science, all philosophical work, is condemned to sterility if it is not undertaken in close contact with empirical science (Carnap 1934c: 260; A.W. Carus' translation).

The inadequacy of syntax to analyze the statements of empirical science was a great defect for Carnap. In empirical science, both metalanguage and object language are used and there is no distinction between them to limit their use over one another (Carus 1999: 22). The obscure characteristics of the statement of science makes them inexpressible in syntax.

This tension between the empirical characteristics of statements of science and syntax's mere linguistic scope pave the way to welcome Tarskian semantics to discuss science and its statements in a broader framework. Tarski's semantical theory of truth makes a distinction between truth and confirmation. The latter

(confirmation), contra to former (truth) is time dependent and requires to left out the principle of excluded middle (Carnap 1949: 119).

Furthermore, unlike syntax, semantics is compatible with the empirical characteristic of science since it allows the relation between words within the linguistic framework and the facts from the empirical world. Carnap mentions how semantics makes it possible to speak about facts and their relation to language:

In this way it became possible to speak about the relations between language and facts. In our philosophical discussions we had, of course, always talked about these relations; but we had no exact systematized language for this purpose. In the metalanguage of semantics, it is possible to make statements about the relation of designation and about truth. [...]. When Tarski told me for the first time that he had constructed a definition of truth, I assumed that he had in mind a syntactical definition of logical truth or provability. I was surprised when he said that he meant truth in the customary sense, including contingent factual truth (Carnap 1963: 60).

This shows that the most important effect of Tarski on Carnap is his distinction between truth and confirmation. By this distinction, the criterion of truth, says Carnap, “consist in the statement itself”. For instance, the statement “snow is white” is true if and only if “snow is white” (Carnap 1949: 120). (Rather than confirmation, Carnap mentions testing procedure for the criteria of truth; first, accepting directly testable observations, second, logical confrontation for the indirectly testable observations.)

This kind of concept of truth-Tarski’s semantical concept of truth- caused a division between the members of the Vienna Circle. Neurath, for instance, showed a strong opposition to this idea because there is no way to decide for a certain that the sentence is true or not. However, Carnap says that even though it cannot be decidable, it can be at least admissible and this was enough for Carnap for a theory of truth. Otherwise, if a term is rejected since it is not certain enough, this would lead to absurd results.

2.4. Is Semantic Turn A Radical Change?

The fact that semantics is different from syntax in terms of including extra-linguistic reference suggests that his transition from syntax to semantics is a significant change. However, the magnitude of this change from syntax to semantics is a very controversial issue. In this part, I will look at whether the transition from the syntax to semantics is a radical break or not. Namely, what does the transition from syntax to semantics exactly means and how it effects Carnap's overall philosophical project?

As we discussed in previous parts, early Carnap's overall concern is mainly the formal part of language or the formalization of the language in such a way that statements can be expressed by means of symbolic logic. Regarding this target, my aim is to shed light on whether the addition of semantics is a step back from formalization or the advancement of Carnap's mere formal methodology. In order to clarify this issue, I will look two contrasting approaches about Carnap's semantic turn. On the one hand, Richard Creath thinks that Carnap's semantic turn is not a significant change because his syntax already includes semantic notions. On the other hand, people like Otto Neurath considers Carnap's addition of semantics as a radical break from syntax and strongly opposes Carnap for his shift to semantics because this opens the door for metaphysical disputes. In this part, I will first examine how radical the change Carnap has gone through during his shift from syntax to semantics.

In his article "Carnap's Move To Semantics: Gains And Losses" Richard Creath investigates this process. He discusses the magnitude of the change that Carnap goes through when semantics is added into his syntax project. Richard Creath first represents "the standard caricature of Carnap's move to semantics" (Creath 1999: 66). According to this caricature picture, Carnap writes *The Logical Syntax of Language* (1937) without taking Gödel's completeness theorem into account. This in turn defects Carnap's whole syntax approach. That is why while Frege and Russell already starts developing a semantic theory, Carnap's syntax becomes a regressing project and Carnap's mere syntax is seen just as a retrograde theory. Then fortunately Carnap meets Tarski, who convinces Carnap about the significance of semantics with

his theory of truth. On this caricature version, therefore, there is a sharp break between Carnap's transition from syntax to semantics periods.

Richard Creath argues against this reading and claims that it is based on a misunderstanding of Carnap's *Logical Syntax*. For Creath, the change from syntax to semantics is not as significant as it is assumed. Creath argues that Carnap is familiar with and sympathetic to semantics even in his syntax period. That is why, Creath argues, Carnap could easily accept semantics after meeting Tarski (Creath 1999: 72). Creath refuses the claim that Tarski affects Carnap substantially.¹⁵ According to Creath, Tarski and Carnap develop their semantic theories independently.¹⁶

Furthermore, on Creath's reading, what Carnap means by syntax is not identical with the contemporary understanding of syntax. What Carnap means by syntax, on Creath's reading, is much closer to semantics, which is contrary to how syntax is used today (Creath 1999: 70). For Creath, specifically two essential points of Carnap's Syntax period remain in his semantic period. First, the idea that philosophy is logic. Second, the view that there is no single correct logic (principle of tolerance). Therefore, the addition of semantic does not really make a significant change.

Although I agree with Creath that there is a difference between Carnapian syntax and what we mean by syntax nowadays, it does undermine the fact that there is a sharp distinction between Carnap's conceptions of semantics and syntax. In other words, even if the confusion originates from the difference between how Carnap uses syntax and how syntax is understood today, this does not necessarily mean that Carnap's conception of syntax is identical to his conception of semantics. In fact, Carnap distinguishes his syntax and semantics very clearly in *Introduction to Semantics* as we discussed previously (Carnap 1942: 9). Recall that Carnap holds that in syntax there is no relation of a sign to its reference while this relation exists in semantics.

¹⁵ Albert Coffa also argues that Carnap's semantic turn is not a dramatic change. However, he differs from Creath on the effects of Tarski. According to Coffa, Carnap's methods were so confusing that he was not aware what was going on. However, Tarski made him realize that what he is trying to describe is not syntax but semantics. Namely, Tarski is the one who induced the birth of Carnap's semantic theory.

¹⁶ Pierre Wagner (2017) discusses this issue in detail in his „Carnapian and Tarskian Semantics” and argues that Carnap's semantic does not depend on Tarski's semantics.

For instance, when Carnap refers to Chwistek's semantics, he says "Chwistek's system of so-called semantics is, on the whole, dedicated to the same task as our syntax" (Carnap 1937: 249). In other words, Chwistek's semantics does not represent the same semantical system as Carnap's because it disregards the relation of signs to its reference.¹⁷ What I can draw from here is that Carnap explicitly distinguishes his semantic from his syntax regarding the relation of sign to its reference. Even if there is an important incompatibility between Carnap's syntax and how we understand syntax today, what matters for the present debate is the extent to which Carnap's syntax can comprise his semantics. That is why we need to understand to what extent Carnap's syntax includes semantical notions. Creath identifies some of the semantical notions without defending them: "Not only is the logical consequence relation itself semantical, as we use the term, but so are truth tables, interpretation, and analyticity, all of which Carnap discusses." (Creath 1996: 251).

In his dissertation "From Syntax to Semantics," Adam Tamas investigates those semantic notions that are already available in syntax concluding that those notions are not inherently semantical.¹⁸ Furthermore, as he points out "Carnap does not say: 'once I understood Tarski's theory, I realized that my own work was already committed to semantics'. Carnap remains clear that LSL was concerned with syntax only." Tuboly's investigation suggests that Creath's argument for the availability of semantical notions in Carnap's syntax is flawed in many respects and Carnap's semantic turn was indeed a significant step (Tuboly 2017: 73).

Contra Creath, some supporters of Carnap's logical syntax, in particular Otto Neurath views Carnap's acceptance of semantics as a radical move. We know that when Carnap asked Tarski to introduce his theory of truth at the 1935 Paris Congress

17 In his "From Syntax to Semantics" Adam Tamas Tuboly indicates that "Chwistek's semantics was, however, quite different from Tarski's and from the Twardowski-school: it is best compared to Hilbert's theory of proof, to his formal method, since it disregards the relation of a sign to its reference" (Tuboly 2017: 69).

18 I am not going into the details of his discussion here, but for instance, regarding truth table Tuboly's criticism goes like this: "Even if on Creath's view according to which truth is a real part of the metaphysical universe and the relationship between the truth of a complex sentence is determined by the truth of its parts in the way that the truth tables might be taken to indicate, it is still inappropriate to regard Carnap's discussion of truth tables as committing him to semantics. That would be analogous to regarding Newton's theory of physics as committed to quantum mechanics on the grounds that the universe is really quantum mechanical" (Tuboly 2017: 62).

for the first time, Tarski hesitated to present his view on semantics. As Carnap explains:

At the Congress, it became clear from the reactions to the papers delivered by Tarski [[Tarski 1936a]—J.W.] and myself [[Carnap 1936]—J.W.] Tarski's skeptical predictions had been right. To my surprise, there was vehement opposition even on the side of our philosophical friends. Therefore, we arranged an additional session for the discussion of this controversy outside the official program of the Congress. There we had long and heated debates between Tarski, Mrs. Lutman-Kokoszyńska, and myself on one side, and our opponents Neurath, Arne Næss, and others on the other (Carnap 1963: 60).

Tarski was right about his concerns. As soon as he introduces his theory of semantics, it causes a division among logical positivist. Especially, Neurath shows strong opposition to Carnap's semantic tendency since Neurath thinks that semantic theory of truth conflicts with the doctrine of logical positivism, in particular with its commitment to extra linguistic referent. According to Neurath, the theory of semantics would allow metaphysical statements and therefore it should be rejected.¹⁹ Yet, he does not explain exactly how. Instead Neurath simply claims that semantic analysis of language leads to divergence from syntactical analysis of language, which is formal and non-interpretive.

Neurath interprets Carnap's semantic turn as a radical change, which can lead to the resurgence of the metaphysics. That is precisely why Neurath opposes Carnap strongly even though he was initially a dedicated follower of Carnap in his syntax period. While Neurath states that semantics leads to metaphysics, he does not offer a clear explanation of how exactly semantics opens the ways for metaphysics.²⁰ Derek Anderson provides one possible reason for Neurath's rejection of semantics.

¹⁹ In his dissertation "*Syntacticism And The Semantic Turn*", Derek Anderson states that "Behind closed doors at the Congrès Descartes in Paris, 1937, Neurath and Carnap engaged in their final face-to-face confrontation over the legitimacy of a semantic conception of truth. Neurath, presenting his essay "The Concept of Truth and Empiricism," proposed that an empirical approach to the language of science should limit itself to investigating only syntactic relations between sentences. Semantic relations between language and reality should be rejected, their existence unsupported by empirical evidence. Neurath went further; he claimed that to admit semantics into the scientific worldview would spell the end of empiricism and a return to the bad old days of Aristotelian metaphysics" (Anderson 2016: 7).

²⁰ Carnap also did not agree on this point with Neurath, he did not think that accepting semantics means the involvement of metaphysical statements.

According to Anderson, Neurath does not reject Tarski's concept of truth altogether, rather what Neurath is afraid of is the application of this theory to non-formal domains. Even though Tarski emphasizes that this kind of semantic is restricted to formalized language, Neurath writes that "The restrictions you impose on the concept of truth will not be observed and your formulations will be used for all kinds of metaphysical speculations" (Quoted in Anderson 2016: 109). It seems that what Neurath worries about is not Tarski's semantic theory of truth, but its application in the non-formal domains. Hence, he is worried that with the inclusion of semantic theory of truth, metaphysical questions such as the nature of reality will leak back into philosophy.

Another important reason for Neurath's rejection of semantics is his belief that commitment to syntax is necessary for ontological neutrality since semantics requires ontological commitment to a domain. For instance, Anderson considers the question of "are there numbers?" both from Carnap's and Neurath's perspectives. From Carnap's perspective, it is hard to even raise those questions without setting a proper linguistic framework. When a linguistic framework is chosen, then they are pseudo-questions since they are external questions. The reason that they are not internal questions is explained as follows:

Nobody who meant the question 'are there numbers?' in the internal sense would either assert or even seriously consider a negative answer. This makes it plausible to assume that those philosophers who treat the question of existence of numbers as a serious philosophical problem and offer lengthy arguments on either side, do not have in mind the internal question (Carnap 1950: 209).

Therefore, Carnap does not take this in terms of ontological commitment to the existence of numbers because after accepting the linguistic framework of numbers, it is no longer sensible to ask "are there really numbers?" Contra Carnap, Neurath conceives the acceptance of semantics very problematic. Once Carnap's semantic framework is applied and accepted, Neurath thinks that there are true statements of arithmetic. This, however, directly opens the way to all those metaphysical questions about numbers (Anderson 2016: 116).

Note that the syntax is all about the relation between signs, it is always within the

language. Semantics, on the other hand, involves word-world relations, therefore incorporates with extra-linguistic entities. For this reason, syntacticism is necessary for ontological neutrality, according to Neurath. Neurath objects Carnap's addition of semantics very strongly precisely because he thinks that the non-formal spirit of semantics opens the gate for metaphysics and damages the scientific method of philosophy that is developed by mere syntax (Tuboly 2017: 67). That is why the semantic theory of truth is problematic for Neurath.

Neurath's reasons for rejecting semantics are important to see how significant Carnap's turn from syntax to semantics is. Covering all the differences between Carnap's conception of syntax and semantics is beyond the scope of this thesis, but we can see a significant change in Carnap's method in his syntax and semantics period.

So far, I argued that Carnap's introduction of the concept of truth to his philosophy by the addition of semantics is criticized because it was seen as abandoning a purely formal methodology of syntax. However, the inadequate aspects of syntax make the addition of semantics necessary in order to have a proper philosophical method that allows to discriminate good (true, meaningful, philosophical) propositions from the bad (false, meaningless, metaphysical) ones so that one can be able to escape from Wittgenstein's prison²¹. More importantly, the move from syntax to semantics case reveals that formal methods on their own are not sufficient as the method of philosophy.

²¹ In his *From Wittgenstein's Prison to the Boundless Ocean: Carnap's Dream of Logical Syntax* (2009) A.W. Carus uses the term "prison" for Wittgenstein's claim about the meaninglessness of the statements.

CHAPTER 3: FROM SINGLE TO MULTIPLE LANGUAGE FRAMEWORKS – PRINCIPLE OF TOLERANCE –

In the previous chapter, we examined Carnap's inclusion of semantics to his method of syntax. In this chapter, however, I will focus on how the single language model that early Carnap offers in the *Aufbau* transforms into multiple language system by the acceptance of the principle of tolerance. As I briefly mentioned in the first chapter, Carnap advocates a single formal language in his method of rational reconstruction. However, he becomes aware that there are other possible language frameworks and we can choose among them based on their convenience. In order to examine this transformation from single language to the multiple language frameworks, first, I look at how Carnap adopts the single language program in the early period, such as in his method of rational reconstruction method in the *Aufbau* (1928). After that, I examine how the adoption principle of tolerance changes his views on the singularity of language, and then he accepts the possibility of other languages in the method of explication. Lastly, I investigate the scope of the principle of tolerance. In particular, I examine whether it applies to metaphysics or not.

3.1. Carnap's Single Language

As I discussed at the beginning of the first chapter, Carnap attempts to achieve multiple goals with the method of *rational reconstruction* in the *Aufbau*. As he indicates there, one of the main goals of construction theory is to provide a common basis for all scientific concepts in order to achieve unity of science. Carnap articulates this aim of construction all concepts from a common basis most clearly in the following passage:

The problem of object types and their mutual relations is of great importance for construction theory since its aim is a system of objects. The various differences and relations which can be indicated, and especially the differences between the various “object spheres”, must somehow be reflected in the system that we are about to develop. This is an especially important test for our form of construction theory, since we subscribe to the thesis that the concepts of all objects can be derived from a single common basis (Carnap 1928: 31).

This “single common basis” for Carnap is the basic language of construction system. As he presents this constitution system in the *Aufbau*, Carnap introduces four different languages; the language of logic, ordinary ‘word’ language, a realist language, and a language of fictional construction (Carnap 1928: 152). According to Carnap, the basic language is the language of logic because it is the most precise and least likely to suggest improper interpretations (Carnap 1928: 152). Moreover, all sentences about further objects are transformable into this language of logic, namely to the sentences which contain only logical signs and signs for the basic objects (Carnap 1928: 154). He is also clear that the other languages should not be taken as seriously and should be rejected as the proper basis of construction theory. This shows that Carnap argues for a single logical language system for the rational reconstruction project. As Stadler (qtd in A.W. Carus) points out, in his correspondence with Neurath, Carnap insists that there is only a single language in the early method of rational reconstruction:

So, are we to draw the inference that there is only a *single* language?’ Carnap replied ‘Well, there are sentences of very different form . . . , but all of them, even the metalogical ones, are in a *single* language’. And this went for the entire hierarchy; when Neurath asks, ‘Is the metalogic of the metalogic expressible in the original language?’ Carnap answered ‘Yes, one can set things up that way’ (Stadler 1997: 329, quoted in Carus 2007:239).

This in turn means that there is a single language, a single common basis that gives roughly the basics of both metalanguage and the object language.²² However, Carnap’s commitment to a single language did not work well. Part of the reason for

²² Carus (2007) discusses this in detail: “All the object languages within the scope of the *General Axiomatics* had been situated in a ‘basic system’, which defined a *single* language that *adumbrated* both metalanguage and object language” (Carus 2007: 229).

this failure is due to the new conception of logic. As Carus indicates:

With the embrace of tolerance Carnap gave up his previous hope that there could be a single, permanent logical framework for the whole of knowledge. This hope, on which the rational reconstruction programme had rested, was a legacy of the classical logicism of Frege and Russell, in which logic had been uniquely and unambiguously characterized – though Carnap had relied not on Frege's or Russell's own characterization, but on Wittgenstein's conception of logic as a necessary artefact of representation. Even this necessity, however, was now given up. There was no longer any such unique characterization of logic; the 'open sea' contained an infinity of possible logics. A logic was now characterized simply as a set of rules, the formation rules and transformation rules for a 'calculus' (Carus 2007: 20).

In other words, there are no a single true logic in this new understanding. Carnap embraced the fact that one 'set of rules' might better work than other 'set of rules' in different circumstances. In order to elaborate more on this, let us look at emergence of the principle of tolerance in the next section.

3.2. Principle of Tolerance

Although *Logical Syntax* (1937) is generally considered to be the place where Carnap introduced the principle of tolerance, Carnap does not introduce this principle out of blue, it was already something that he defended, albeit implicitly, in many contexts and discussions with other logical positivists. A.W. Carus states that "Carnap recorded no single inspiration or breakthrough moment; we do not even know exactly when the turning point came" (Carus 2007: 252). Carnap explains in one of the famous passages of his *Intellectual Autobiography* (1963a) how he gains valuable insights for the development of his own thinking in his exchange of ideas with philosophers and scientists from different philosophical disciplines:

This neutral attitude toward the various philosophical forms of language, based on the principle that everyone is free to use the language most suited to his purpose, has remained the same throughout my life. It was formulated as "principle of tolerance" in *Logical Syntax* and I still hold it today, e.g., with respect to the contemporary controversy about a nominalist or Platonic language (Carnap 1963a: 18).

Another discussion in which Carnap sees the need for the principle of tolerance is the dispute over the foundation of mathematics in *Logical Syntax*. The fundamental concern in the dispute regarding the foundation of mathematics is about the true nature of mathematical entities, more specifically whether they are mental constructions or mind independent entities. There are three different approaches regarding the debate of the nature of mathematical entities; logicism, intuitionism, and formalism. This mathematical dispute is essentially a metaphysical dispute because the existence and the nature of the mathematical entities are in question (Carnap 1939: 192-193).²³

Carnap's solution to this problem does *not* involve making a conclusive choice between these three options. Instead, he suggests that we should make a pragmatic choice, meaning that we should choose the theory of mathematics based on its practicality and convenience. In order to avoid unfruitful disputes about the nature of mathematical objects, Carnap's suggestion is that we favor the theories that are more efficient, simpler and serves our purposes better. As Carnap puts it:

If we regard interpreted mathematics as an instrument of deduction within the field of empirical knowledge rather than as a system of information, then many of the controversial problems are recognized as being questions not of truth but of technical expedience. The question is: Which form of the mathematical system is technically most suitable for the purpose mentioned? Which one provides the greatest safety? If we compare, e.g., the systems of classical mathematics and of intuitionistic mathematics, we find that the first is much simpler and technically more efficient, while the second is more safe from surprising occurrences, e.g., contradictions (Carnap 1939: 192-193).

In other words, Carnap does not think that we have any reason to privilege any metalanguage as the true one. We can at most claim that one language is better than the other for a specific purpose. With the acceptance of the principle of tolerance, Carnap gives up advocating the existence of a single formal language as the basis of rational reconstruction and states that:

²³ This shows that when Carnap tries to refute metaphysics, it is not just the historical metaphysical debates but also his contemporary issues even if they occur among the leading mathematicians of the time such as L.E.J. Brouwer, David Hilbert and Hermann Weyl.

It is not our business to set up prohibitions, but to arrive at conventions. In logic there are no morals. Everyone can construct his logic, i.e. his language form, however he wants. If he wants to discuss it with us, though, he will have to make precise how he wants to set things up. He has to give syntactic rules rather than philosophical considerations (Carnap 1937: 45).

In other words, while there can be different logical frameworks, Carnap emphasizes that certain language frameworks can be more useful and preferable over others for certain purposes. Rather than making philosophical discussions about which framework is true, we should decide on the pragmatic ground. As he states in *Meaning and Necessity* (1947) and *Logical Foundations of Probability* (1950a):

Let us grant to those who work in any special field of investigation the freedom to use any form of expression which seems useful to them; the work in the field will sooner or later lead to the elimination of those forms which have no useful function (Carnap 1947: 221).

To decree dogmatic prohibitions of certain linguistic forms instead of testing them by their success or failure in practical use, is worse than futile; it is positively harmful because it may obstruct scientific progress... Let us be cautious in making assertions and critical in examining them, but tolerant in permitting linguistic forms (Carnap 1950a: 221).

Carnap's commitment to the principle of tolerance lasts throughout Carnap's philosophy and becomes one of the central features of his method of explication. One of the effects of Carnap's commitment to the principle of tolerance can be seen in the transformation of rational reconstruction to explication. A.W. Carus points out:

Rational reconstruction was a one-way street; vernacular concepts were to be replaced, piece by piece, with more precise ones. It was assumed that there was a single, definitive logical language in which this reconstruction could be achieved. But under the new regime of tolerance after 1932, there is no longer a single correct language. There is an infinity of possible languages, and the community must decide among them. Explication is therefore *dialectical*, as Howard Stein, a student of Carnap's, has pointed out (Stein 1992), in a way that rational reconstruction was not (Carus 2007: 42).

That is to say, one of the most remarkable differences between rational reconstruction and the method of explication lies in the language preference. In the rational reconstruction, Carnap initially aims to reach a single common basis, a

correct formal language, which does not allow any room for the use of other language frameworks. After the acceptance of the principle of tolerance, he abandons this method of rational reconstruction, in which all concepts are constructed based on a single formal language. Instead of rational reconstruction, he appeals to the method of explication, in which we can choose a particular language framework over another based on pragmatic concerns.²⁴ So far, I discussed Carnap's tolerant attitude towards different logical frameworks. Now I will look at how the principle of tolerance affects Carnap's attitude towards metaphysics.

3.3. The Principle of Tolerance and Metaphysics

Carnap's principle of tolerance starts in the context of choosing between different logical frameworks. However, the scope of this principle is controversial. In other words, it is not clear whether this tolerant attitude applies also to metaphysical domain. As we discussed in previous section, Carnap strictly rejects metaphysics. So, the immediate question is: What are the criteria to apply the principle of tolerance? In other words, in which situations is this principle applicable and in which it is not? Without establishing a concrete criterion, there is no sensible ground to apply the principle of tolerance to some domains and not to others.

In order to understand if the principle of tolerance is applicable to metaphysics, let us now examine Carnap's ground for rejecting metaphysics more closely. One of Carnap's reasons for rejecting metaphysics is the inability of metaphysical statements to be constructed in a formal way. As he explains it in *Logical Syntax*:

The fact that Wittgenstein does not believe in the possibility of the exact formulation of the sentences of the logic of science has as its consequence that he does not demand any scientific exactitude in his own formulations, and that he draws no sharp line of demarcation between the formulations of the logic of science and those of metaphysics [...] translatability into the formal mode of speech - that is, into syntactical sentences - is the criterion which separates the proper sentences of the logic of science from the other philosophical sentences — we may call

²⁴ Carnap discusses how to choose between different language frameworks in his article "Empiricism, Semantics and Ontology", however, I did not discuss this issue since the only aim here is to show his shift from a single to multiple language frameworks.

them metaphysical. (Carnap 1937: 284).

In other words, the characteristic of metaphysical sentences that differs from the formulation of the logic of science is their untranslatability into the formal mode of speech. Since metaphysical sentences do not have any factual and empirical content, for Carnap, they are pseudo-sentences and meaningless (Carnap 1928b: 334).

Therefore, they cannot be formalized in the logical language.

However, there are problems with respect to the criterion of translatability into the logical (syntactical) form of language. In fact, Carnap abandons this criterion for two reasons. First, as I discussed in chapter two, with the inclusion of semantics and pragmatics, Carnap gives up on the insistence of syntactical forms of language. Second, as Carnap admits, there is indeed no single logical language that metaphysical statements should be translated into.

Furthermore, even if the metaphysical sentences are reconstructed in a well specified language framework that can be formulable in syntactical way, they need to be capable of empirically tested. As Carnap writes in the *Philosophical Foundations of Physics*:

The first efforts at explanation, those of Ionian natural philosophers, were certainly metaphysical; the world is all fire, or all water, or all change. Those early efforts at scientific explanation can be viewed in two different ways. We can say: "This is not science, but pure metaphysics. There is no possibility of confirmation, no correspondence rules for connecting the theory with observable phenomena." On the other hand, we can say: "These Ionian theories are certainly not scientific, but at least they are pictorial visions of theories. They are the first primitive beginnings of science." It must not be forgotten that, both in the history of science and in the psychological history of a creative scientist, a theory has often first appeared as a kind of visualization, a vision that comes as an inspiration to a scientist long before he has discovered correspondence rules that may help in confirming his theory. When Democritus said that everything consists of atoms, he certainly had not the slightest confirmation for his theory. Nevertheless, it was a stroke of genius, a profound insight, because two thousand years later his vision was confirmed. We should not, therefore, reject too rashly any anticipatory vision of a theory, provided it is one that may be tested at some future time. We are on solid ground, however, if we issue the warning that no hypothesis can claim to be scientific unless there is the

possibility that it can be tested... When a theory is first proposed, we should not demand more than this (Carnap 1966: 244).

Here Carnap does not reject metaphysical statements completely, but requires them to be confirmable and empirically testable, at least in the long run. Namely, they can be accepted as far as they are capable of verifiable even if two thousand years later. However, this does not seem a very concrete criterion: How do we know beforehand that those metaphysical statements are verifiable by science? The criterion of confirmability of a theory in the future is not very precise.

From my point of view, even though Carnap never makes peace with metaphysics completely, the non-formal aspects of his philosophy, in particular the addition of semantics and pragmatics as well as his commitment to the principle of tolerance, would allow at least certain kind of metaphysics. For example, current metaphysical studies which make use of logical languages can be accepted as a well-formed framework for Carnap since the statements of this kind of metaphysics can be formulated by those logical languages.

Moreover, we see that the influence of the Principle of Tolerance also changes Carnap's general attitude towards philosophy and led him to broaden his conception of philosophy. As he explains in his *Intellectual Autobiography* (1963):

In earlier times, I sometimes made attempts to give an explication of the term 'philosophy'. The domain of those problems which I proposed to call 'philosophical' became step by step more comprehensive [...]. Yet, actually none of my explications seemed fully satisfactory to me even when I proposed them; and I did not like the explications proposed by others any better. Finally, I gave up the search. [...] It seems better to leave the term 'philosophy' without any sharp boundary lines, and merely to propose the inclusion or the exclusion of certain kinds of problems [...] many metaphysical theses and discussions can certainly be regarded as more or less conscious preparatory stages on the way to a systematic logic and science, and as preliminary to framework analyses (Carnap 1963: 862).

This passage shows how Carnap's attitude towards philosophy has evolved. After many attempts to formalize philosophy via construction of a formal method, Carnap gives up on this mission and accepts that philosophy is better left without boundaries.

CHAPTER 4: CONCLUSION

In the previous three chapters, I have displayed how and why some of the formal features of Carnap's methodology become less and less formal. The rational reconstruction method of early Carnap turns into the method of explication of late Carnap because of this transformation. In the first chapter, I discussed how Carnap emphasizes the importance of giving the definition of concepts, just as it is done in mathematics, in the rational reconstruction model. Whereas in the explication model, he gives up on the definition part in constructing a scientific language. In the second chapter, I investigated the move from syntax to semantics. First, I focused on *Philosophy and Logical Syntax* in order to see the details of Carnap's syntax project. After that, I examined the *Introduction to Semantics* to illustrate why Carnap involves semantics and pragmatics in addition to syntax in his scientific language project. Syntax by itself, as a pure formal part of the language, is not enough to undertake Carnap's aim of philosophical methodology. Therefore, late Carnap's method of explication involves not just the formal part of the language but also the other aspects of the language in contrast to early Carnap's rational reconstruction model. In the third chapter, I investigated how early Carnap aims a single formal scientific language to provide a common basis for all sciences and late Carnap accepts the possibility of other language models by introducing the principle of tolerance. The principle of tolerance is an important turning point in Carnap's philosophy which makes him more tolerant and open to other approaches in philosophy.

The common characteristic of all these three changes is the decrease in the formal aspects of Carnap's philosophy. In this research, I try to shed light on the background reasons for this transformation because I consider Carnap's philosophy as a good illustration of how formalization of philosophy fails and why the methodology of philosophy cannot be merely formal.

The background motivation for the formal philosophy of early Carnap is the aim of scientific philosophy by the application of logic in philosophy. Logic, as formal discipline, provides a precise way to deal with the issues in mathematics and science, however, whether it also applies to philosophy is a controversial issue. Considering the first section, there is a sharp contrast between Kant and (early) Carnap in terms of the applicability of formal methods in philosophy. On the one hand, the mathematical methods can never be used in philosophy for Kant. On the other hand, Carnap reduces the method of philosophy to the purely formal syntactical method, at least in his early times. I partially agree with both of them.

Formal methods can be used for the cases that the problem really stems from linguistic confusion. However, not every philosophical problem is a matter of linguistic as Carnap believes. There are other issues that cannot be handled only by means of formal methods. That's why I argue that formal methods on its own are deficient and the non-formal components are essential in the method of philosophy.

Regarding the second chapter, I demonstrate that how in early Carnap a strict formal logical analysis is assigned as the only methodology of philosophy, whereas in later Carnap he gives up his radical emphasis on formal mode of speech and involves semantics. The non-formal characteristics of semantics indicate that the mere formal methods are not sufficient by themselves to analyze the philosophical statements.

In the third chapter, we saw that Carnap also gives up on another formal aspect of his methodology. First, he insists on the singularity of formal language that he develops in *Aufbau*. Later, he accepts the possibility of multiple language frameworks after he embraces the principle of tolerance.

To sum up, I examined three different transition points, which shows less and less formal characteristics in Carnap's method of philosophy to argue that formal methods on their own are not sufficient in philosophy.

REFERENCES

- Awodey, S., & Carus, A. W. (2009). *From Wittgenstein's prison to the boundless ocean: Carnap's dream of logical syntax*. In Pierre Wagner (ed.), *Carnap's Logical Syntax of Language*. Palgrave-Macmillan.
- Beaney, M. (1996). *Frege: Making Sense*. London: Duckworth.
- _____(2000). Conceptions of Analysis in Early Analytic Philosophy. In *Acta Analytica* 15, p. 97-115.
- _____(2002). Decompositions and Transformations: Conceptions of Analysis in the Early Analytic and Phenomenological Traditions. In *Southern Journal of Philosophy* 40, Supp. Vol., p. 53-99.
- Bergmann, G. (1944). Pure Semantics, Sentences, and Propositions. *Mind*, 53, p. 238 – 257.
- Boniolo, G. (2003). Kant's Explication and Carnap's Explications: The Redde Rationem. *International Philosophical Quarterly*. 43, 289-298.
- Carnap, R. (1928). *Der Logische Aufbau der Welt*, Berlin-Schlachtensee: Weltkreis-Verlag; translated by R. George (1967) as *The Logical Structure of the World*, Berkeley: University of California Press.
- _____(1935). *Philosophy and Logical Syntax*. London: Kegan Paul, Trench, Trubner.
- _____(1937). *The Logical Syntax of Language*. tr. A. Smeaton, London: Kegan Paul.

- _____(1942). *Introduction to Semantics*. Cambridge: Harvard University Press.
- _____(1943). *Formalization of Logic*. Cambridge: Harvard University Press.
- _____(1945). Hall and Bergmann on Semantics. *Mind*, 54, 148 – 155.
- _____(1947). *Meaning and Necessity*. Chicago: University of Chicago Press, 2nd ed. 1956.
- _____(1949). Wahrheit und Bewährung. In *Actes du Congrès international de philosophie scientifique, Sorbonne, Paris 1935*, fasc. 4. *Unité de la science*, Paris: Hermann, pp. 18–23. A modified version is translated as “Truth and Confirmation”, in Feigl and Sellars 1949: 119–127.
- _____(1950a). *Logical Foundations of Probability*. Chicago: University of Chicago Press, 2nd ed. 1962.
- _____(1950b). Empiricism, Semantics, and Ontology. *Revue Internationale de Philosophie*, 4(11): 20–40. Reprinted in Carnap 1956b: 205–221.
- _____(1961). *Der logische Aufbau der Welt*, 2nd ed., Hamburg: Felix Meiner, repr. 1998.
- _____(1963). *Intellectual Autobiography*. In Schilpp 1963, p. 1-84.
- _____(1966). *Philosophical Foundations of Physics: An Introduction to the Philosophy of Science*. New York: Basic Books.
- _____(1999). Carnap, Syntax, and Truth. In *Truth and Its Nature (If Any)*, In Jaroslav Peregrin (ed.), Dordrecht: Springer Netherlands, p. 15–35.
- Carus, A.W. (2003). Carnap vs. Gödel on Syntax and Tolerance in P. Parrini, W.C. Salmon, and M.H. Salmon (Eds.), *Logical Empiricism: Historical and Contemporary Perspectives*, (pp. 57-64). Pittsburgh: University of Pittsburgh Press.
- _____(2007). *Carnap in Twentieth-Century Thought: Explication as Enlightenment*. Cambridge: Cambridge University Press.

_____(2019). *Neurath and Carnap on Semantics*. In Adam Tuboly & Jordi Cat (Eds.), *Neurath Reconsidered: New Sources and Perspectives*. Springer Verlag.

Creath, R. (1990). The Unimportance of Semantics. *Proceedings of the Biennial Meeting of the Philosophy of Science Association*, p. 405 – 416.

_____(1999). Carnap's Move to Semantics: Gains and Losses. *Vienna Circle Institute Yearbook* 6:65-76.

Friedman, M. (1999). *Reconsidering Logical Positivism*, Cambridge: Cambridge University Press.

_____(2012). Rational reconstruction, explication, and the rejection of metaphysics. In Pierre Wagner (ed.), *Carnap's Ideal of Explication and Naturalism*. Palgrave-Macmillan.

Guyer, Paul (ed.) (2010). *The Cambridge Companion to Kant's Critique of Pure Reason*. Cambridge University Press.

Hall, E. (1944). The Extra-Linguistic Reference of Language (II.). *Mind*, 53, p. 25 – 47.

Hare, R. M. (1952). *The Language of Morals*. Oxford Clarendon Press.

Kienzler, W. (2012). Carnap's conception of philosophy. In Pierre Wagner (ed.), *Carnap's Ideal of Explication and Naturalism*. Palgrave-Macmillan.

Leitgeb, H. & Carus, A. (2020). *Rudolf Carnap*, The Stanford Encyclopedia of Philosophy, Edward N. Zalta (ed.). Retrieved from <https://plato.stanford.edu/archives/sum2020/entries/carnap/>

Neurath, O. (1944). *Foundations of Social Sciences*. Chicago: University of Chicago Press.

Olen, P. (2017). Erratum to: A forgotten strand of reception history: understanding pure semantics. *Synthese* 194 (4): 1423-1423.

Schilpp, P.A. (ed.) (1963). *The Philosophy of Rudolf Carnap*, La Salle, Illinois: Open Court.

Tuboly, A. (2017). From Syntax to Semantic — Carnap's Inferentialism and Its Prospects. *Polish Journal of Philosophy* 11 (1): 57-78.

Tuboly, A., & Cat, J. (eds.) (2019). *Neurath Reconsidered: New Sources and Perspectives*. Springer Verlag.

Vatansever, S. (2020). A Critique of Quine and Friedman's Reading of the Aufbau. (Manuscript).

Westphal, K. (2015). 'Conventionalism and Impoverishment of the Space of Reasons: Carnap, Quine and Sellars.' *Journal for the History of Analytical Philosophy*. 3. 10.15173/jhap.v3i8.42. pp.1-66

Wittgenstein, L. (1922). *Tractatus Logico-Philosophicus* (TLP C. K. Ogden (trans.), London: Routledge & Kegan Paul. Originally published as Logisch-Philosophische Abhandlung, in *Annalen der Naturphilosophische*, XIV (3/4), 1921.