

Duality and Opposition in Heraclitus and Modern Philosophy of Language and Linguistics

A thesis submitted for the degree of Doctor of Philosophy, at Trinity College Dublin

by

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Keith Begley

Duality and Opposition in Heraclitus and Modern Philosophy of Language and Linguistics

Keith BEGLEY

Aim: To investigate the phenomenon of Duality, that is, opposition in its many forms. In particular, as it appears in Heraclitus' philosophy and his reaction to his predecessors, in the form of the thesis, apparently Heraclitean, of the Unity of Opposites; also, how duality appears in modern philosophy of language and linguistics, in particular with reference to the philosophy of Jerrold J. Katz.

Thesis: That opposition is a phenomenon that has a real basis, an adequate explanation of which requires a hypotactic metaphysics (Heraclitus) and a decompositional semantics (Katz).

Part 1: Duality and Opposition in Heraclitus

Chapter 1: Duality in Heraclitus and in Heraclitus studies: the Unity of Opposites thesis

Aim: To analyse and assess some of the various contemporary positions and problems regarding the interpretation of Heraclitus' Unity of Opposites thesis, focused, in part, around Roman Dilcher's objection to the very supposition that Heraclitus holds such a thesis.

Thesis: That two distinctions in particular are appropriate for classifying the various positions: the Analytic/Synthetic and the Immanent/Transcendent distinctions. That, against Dilcher, there is a thesis of the unity of opposites in Heraclitus.

Chapter 2: Heraclitus' Revolution against Naïve Metaphysics

Aim: To discuss the interpretations of Alexander Mourelatos and Julius Moravcsik, and to describe, explicate, and extrapolate Heraclitus' revolution against naïve metaphysics.

Thesis: That understanding Heraclitus in terms of his reaction to the naïve metaphysics that, in his view, preceded him provides unique solutions to a number of difficult interpretative issues. That Heraclitus had a proto-notion of essence and was not an extreme flux theorist.

Chapter 3: The Unity of Opposites, Markedness, and the Logos

Aim: To respond to Dilcher's rejection of the notion of the Unity of Opposites thesis in Heraclitus and to compare and draw conclusions from a comparison of the views of Mourelatos and Dilcher, regarding, in particular, *Markedness* and the *Logos*.

Thesis: That Dilcher was incorrect to question the presence in Heraclitus of the Unity of Opposites thesis. That *Markedness* further reveals the hypotactic nature of Heraclitus' metaphysics. That the *logos* is not the law and measure of all things, rather, it is that which the speaker is in communion with in order to have the capacity and competence to express the 'what it is to be' of the things and the reasons for the necessity of their interactions.

Part 2: Duality and Opposition in Modern Philosophy of Language and Linguistics

Chapter 4: Contemporary Scientific Research into Antonymy

Aim: Analysis of linguistic research conducted into the semantics of antonymy in the latter part of the 20th century and early 21st century, including some work carried out in the field of psychology regarding the perception of opposition. Analysis and criticism of a particular example of the approach to defining the kinds of antonymy by way of *meaning postulates*.

Thesis: That, through their investigations, the linguists and others come up against the problem of the status of antonymy. That antonymy (semantic opposition) should not be defined in terms of logical opposition.

Chapter 5: Antonymy and the Semantic Theory of Katz

Aim: To attend to the problems identified in the previous chapter, regarding the definition of antonymy in terms of logical opposition (*meaning postulates*), and to discuss the work of Katz on this issue. To explicate and extrapolate upon the treatment of antonymy in Katz' semantic theory. To draw out the implicit parallel with certain aspects of Heraclitus' philosophy.

Thesis: That a decompositional semantics is required to define the notion of antonymy. That Katz' semantic theory is capable of providing semantic definitions for the main kinds of antonymy. That there is a parallel between Heraclitus' rejection of naïve metaphysics and Katz' rejection of *meaning postulates*, and that both of their resultant views depend upon *hypotactic* or decompositional structure.

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Résumé

Title: Duality and Opposition in Heraclitus and Modern Philosophy of Language and Linguistics

Aim: To investigate the phenomenon of Duality, that is, opposition in its many forms. In particular, as it appears in Heraclitus' philosophy and his reaction to his predecessors, in the form of the thesis, apparently Heraclitean, of the Unity of Opposites; also, how duality appears in modern philosophy of language and linguistics, in particular with reference to the philosophy of Jerrold J. Katz.

Thesis: That opposition is a phenomenon that has a real basis, an adequate explanation of which requires a hypotactic metaphysics (Heraclitus) and a decompositional semantics (Katz).

Methodology: Analysis of Duality as it appears in a number of contexts: ancient philosophy (Heraclitus and the, so-called, naïve metaphysics), linguistics (lexical semantics), psychology (perception of opposition), philosophy of language (Katz).

Part 1: Duality and Opposition in Heraclitus

Chapter 1: Duality in Heraclitus and in Heraclitus studies: the Unity of Opposites thesis

Aim: To analyse and assess some of the various contemporary positions and problems regarding the interpretation of Heraclitus' Unity of Opposites thesis, focused, in part, around Roman Dilcher's objection to the very supposition that Heraclitus holds such a thesis, and likewise to a number of issues, distinctions, and critics.

Thesis: That two distinctions in particular are appropriate for classifying the various positions: the Analytic/Synthetic and the Immanent/Transcendent distinctions. That, against Dilcher, there is a thesis of the unity of opposites in Heraclitus.

Methodology: Analysis of various interpretations Heraclitus' Unity of Opposites thesis, arguing that these views are unjustifiably partial in relation to the two distinctions. Analysis of Dilcher's proposal that there is no Unity of Opposites thesis.

Chapter 2: Heraclitus' Revolution against Naïve Metaphysics

Aim: To discuss the interpretations of Alexander Mourelatos and Julius Moravcsik, and to describe, explicate, and extrapolate Heraclitus' revolution against naïve metaphysics.

Thesis: That understanding Heraclitus in terms of his reaction to the naïve metaphysics that, in his view, preceded him provides unique solutions to a number of difficult interpretative issues. That Heraclitus had a proto-notion of essence and was not an extreme flux theorist as is often supposed.

Methodology: Analysis of the interpretations of Mourelatos and Moravcsik, Heraclitus' example of 'The River', and Aristotle's assessment of Heraclitus' road claim.

Chapter 3: The Unity of Opposites, Markedness, and the Logos

Aim: To respond to Dilcher's rejection of the notion of the Unity of Opposites thesis in Heraclitus and to compare and draw conclusions from a comparison of the views of Mourelatos and Dilcher, regarding, in particular, *Markedness* and the *Logos*.

Thesis: That Dilcher was incorrect to question the presence in Heraclitus of the Unity of Opposites thesis. That *Markedness* further reveals the hypotactic nature of Heraclitus' metaphysics. That the *Logos* is not the law and measure of all things, rather, it is that which the speaker is in communion with in order to have the capacity and competence to express the 'what it is to be' of the things and the reasons for the necessity of their interactions, but cannot itself be described directly.

Methodology: Analysing and responding to Dilcher's three problems in light of Mourelatos' interpretation. Showing that what prompts these problems is, ultimately, a misunderstanding regarding *Markedness*. Analysis of the differences between the interpretations of Dilcher and Mourelatos regarding the status of the logos, in part through their reactions to the views of Willem Jacob Verdenius.

Part 2: Duality and Opposition in Modern Philosophy of Language and Linguistics

Chapter 4: Contemporary Scientific Research into Antonymy

Aim: To outline and discuss some of the contemporary research into antonymy and opposition, in linguistics and psychology, and to outline a number of particular problems: problems articulated in this research as well as problems arising, as I argue, from it.

Thesis: That, through their investigations, the linguists and others come up against the problem of the status of antonymy. That antonymy (semantic opposition) should not be defined in terms of logical opposition. By 'the problem of the status of antonymy' I mean the problem of both its metaphysical and its semantic status; and, as we shall see, I think these are closely linked and really can be thought of as amounting to a single complex problem. I make use of Heraclitus to address the problem of the metaphysical status of antonymy, and I make use of contemporary scientific research on antonymy, in conjunction with the philosophy and semantics of J.J. Katz, to address the problem of its semantic status.

Methodology: Analysis of linguistic research conducted into the semantics of antonymy in the latter part of the 20th century and early 21st century, including some work carried out in the field of psychology regarding the perception of opposition. Analysis and criticism of a particular example of the approach to defining the kinds of antonymy by way of *meaning postulates*, namely, that put forward by Ronnie Cann.

Chapter 5: Antonymy and the Semantic Theory of Katz

Aim: To attend to the problems identified in the previous chapter, regarding the definition of antonymy in terms of logical opposition (*meaning postulates*), and to discuss the work of Katz on this issue. To explicate, and extrapolate upon, the treatment of antonymy in Katz' semantic theory. To draw out the implicit parallel with certain aspects of Heraclitus' philosophy, which were discussed in the first part of the thesis.

Thesis: That a decompositional semantics is required to define the notion of antonymy. That Katz' semantic theory is capable of providing semantic definitions for the main kinds of antonymy. That there is a parallel between Heraclitus' rejection of naïve metaphysics and Katz' rejection of *meaning postulates*, and that both of their resultant views depend upon *hypotactic* or decompositional structure.

Methodology: Analysis and discussion of Katz' arguments against the meaning postulate approach to semantic properties and relations. Application of Katz' arguments against meaning postulates to the case of antonymy. Analysis and extrapolation of Katz' treatment of antonymy in his semantic theory.

Introduction

As the Résumé has just distilled the main aims, theses, arguments, and methods of this dissertation, I will, in what follows, allow myself a somewhat freer style, including some personal origins of the project, while at the same time also, as I intend, returning in a fuller way to these same aims, theses, arguments and methods. This introduction is divided into three sections: the first will present some background to, and some history of, the project; the second will provide an introduction to the thesis as a whole; finally, the third will provide an introduction to content of the individual chapters of the thesis.

§1 Background and history of the project

This project has its origins in a question that I have been considering for quite some time now; if I was forced to put a date on it I would say since around 2002. Before I began my undergraduate degree in 'Mental and Moral Science' at Trinity College Dublin, Ireland, I had been reading the Daoist teachings of the *Dao De Jing*, an ancient Chinese classic supposedly composed by Lao Tzu. What struck me about these writings was the ingenious use of opposites, their relationships, and reversals, to explicate the primary principle of Daoism, the *Dao* or 'way'. The central question that arose from my reading of this text was 'What is Duality?', that is, what is the nature of the ubiquitous pairwise and oppositional structuring of reality, thought, and language, apparent or otherwise. My position on this question then, and for quite some time since, has been that Duality is in some sense an illusion, and not a really existing property of reality. This went hand-in-hand with my general inclination, at that time, towards monism and idealism, which were philosophical theories that I was beginning to learn about for the first time.

My interest in Heraclitus stems from the same time and context. I first came across the texts of Heraclitus while looking in the college library for books about Daoism and other eastern philosophies. There was very little of this material covered on the programme that I was enrolled on, so I elected to spend a good part of my free time doing my own extracurricular reading on these subjects. Heraclitus had also been neglected by the history of philosophy element of the programme, which began with Parmenides and moved swiftly on to Plato. So, my own discovery of the

collection of fragments published in John Burnet's *Early Greek Philosophy*, came as somewhat of a revelation to me.

If you had known me well back then you would know that I always carried around with me copies of the *Dao De Jing*, Heraclitus' *Fragments*, and perhaps also a collection of the Buddha's sayings known as the *Dhammapada*. I could easily have been described as being fanatical. I would rant about the virtues of these texts at length to anyone who could stand to listen to me for more than a few moments.

There are a great number of similarities to be found between the texts of Lao Tzu and Heraclitus, especially when it comes to the examples that involve opposites. My undergraduate studies culminated, in 2009, with a short dissertation addressed to a comparison of these two philosophies. When the time came, a year or so later, to submit a proposal for a doctoral thesis topic, I chose to focus my proposal around what these two philosophies had to say regarding the central question that I had been considering, 'What is Duality?' However, since then the project has taken a number of turns. In order to fulfil the criteria to transfer to the doctoral stage of the programme I was asked to produce some sample chapters. I was asked to take account in one of these chapters of some 'more technical' material than that which I had up until then been considering; elements of that chapter still survive in Chapter 4 of this thesis. I owe a debt of gratitude to Professor Peter Simons in this regard, for it was he who pointed me towards Geoffrey Leech's *Towards a Semantic Description of English* (1969), and thereby prompted my interest in antonymy in particular (as opposed to Duality in general). Although Leech's work does not feature to any great extent in this thesis, it was the subsequent research that I conducted regarding the topic of antonymy in linguistics that has had a deep impact upon the character of this thesis as a whole.

Sometime after this I decided to drop the element of the project relating to Daoism, given that the Heraclitean element had grown dramatically, and my interest in antonymy and philosophy of language had also increased. The Heraclitean element of the project at this stage had primarily been informed by the work of Roman Dilcher, and his rejection of some of the traditional approaches to Heraclitus' philosophy. Dilcher turned out to be an old acquaintance of my supervisor Vasilis Politis, from their days in Oxford (although it took quite some time for this information to be divulged). I also had the opportunity to meet and discuss with Dilcher in March of 2013, when we invited him to present a paper on Heraclitus to

the Trinity Plato Centre, Trinity College Dublin, and another on Aristotle to the department of philosophy. Much of my research from this stage survives in Chapter 1 of this thesis; however, my attitude to Dilcher's interpretation has greatly evolved since then.

Another turn in my research, this time regarding Heraclitus' Unity of Opposites thesis, came in the summer of 2013, when I encountered a 2008 reprint of a 1973 article by Alexander Mourelatos entitled 'Heraclitus, Parmenides, and the Naive Metaphysics of Things'. This article articulated a point of view that I had not seen expressed in any of the other literature that I had come across on the topic, and seemed to have been absent from Dilcher's considerations. I will not say more about this now, but suffice it to say, this paper caused me to reevaluate my interpretation of Heraclitus radically and, indeed, as a consequence, my attitude to Dilcher's interpretation. Through discussion of this paper with two of my colleagues from the Trinity Plato Centre at the time, Peter Larsen and Christopher Buckels, I was encouraged to contact Professor Mourelatos and put certain questions that I had about his paper to him directly, which I did in the summer of 2014. Rather than respond to my questions in what would have been a very long email, Professor Mourelatos very kindly offered to telephone me to discuss them. I owe him a debt of gratitude for taking the time to consider my questions and discuss them with me, and for his kind words and strong encouragement of my work. This was extremely helpful for eventually arriving at the understanding of his work that I have endeavoured to capture in this thesis, which is discussed in Chapters 2 and 3.

It was around this same time that I first encountered the work of Jerrold J. Katz, no doubt to the dismay of my supervisor who was at the time expecting me to finish my thesis by the end of that summer. I had been hunting for appropriate philosophical treatments of antonymy, over and above the linguistic and psychological treatments that I had been considering. I briefly considered the *inferentialist* views of Robert Brandom, and the *meaning postulate* approach of Ronnie Cann, before discovering and settling on an analysis of Katz' philosophy. It was primarily his rejection of the *meaning postulate* approach that initially intrigued me, and was the avenue through which I discovered his work. Katz's semantic theory reminded me of what were my naïve expectations of what the study of logic was about before I first encountered it during my undergraduate studies. That is (to reconstruct my naïve thought in more informed terms), an *a priori* method of

determining the truth of certain statements on the basis of their meaning alone; imagine my shock in then discovering the scant extent to which standard predicate logic is actually able to accomplish this.

During the final year of this project I have collected and studied a large proportion of the material that Katz published during his career, and he has fast become one of my favourite philosophers. The clarity of his writing was a breath of fresh air, (that is, I should say, apart from his almost pathological use of split infinitives) and has prompted within me a renewed interest in the problems of the philosophy of language.

§2 Introduction to the thesis as a whole

Title: Duality and Opposition in Heraclitus and Modern Philosophy of Language and Linguistics

Aim: To investigate the phenomenon of Duality, that is, opposition in its many forms. In particular, as it appears in Heraclitus' philosophy and his reaction to his predecessors, in the form of the thesis, apparently Heraclitean, of the Unity of Opposites; also, how duality appears in modern philosophy of language and linguistics, in particular with reference to the philosophy of Jerrold J. Katz.

The aim of this thesis is to investigate what I call 'Duality', that is, opposition as it appears in its many forms. This term is merely employed as a general term to refer to all kinds of opposition. It also has the advantage of being neutral with respect to notions such as the Unity of Opposites, and questions such as those regarding the status of opposition in its various forms. For the purposes of this thesis, my inquiry will be restricted, in the first part of this thesis, to how opposition appears in Heraclitus and Heraclitus studies, attending to his reaction to his predecessors' theorising regarding opposites and, also, in the second part of this thesis, to how opposition appears in the form of antonymy in the philosophy of language and linguistics, drawing on linguistic literature from the field of lexical semantics and, in particular, the philosophy of Jerrold J. Katz.

Thesis: *That opposition is a phenomenon that has a real basis, an adequate explanation of which requires a hypotactic metaphysics (Heraclitus) and a decompositional semantics (Katz).*

The central claim of this thesis is that opposition has a real basis and is not (as I once believed) an illusion without such a real basis in the world. This is not to say that there are not also constructed examples of opposites, which come about for contingent, pragmatic, or contextual reasons, or in association with other oppositions, and have no real basis of themselves. The real relations of opposition underpin certain necessities in language and the world, which would not arise if these oppositions were illusory in the sense mentioned above.

The explanation of these necessities and, consequently, the relation of opposition, require what I call a *hypotactic* metaphysics. This is a term that I employ in contradistinction to Mourelatos' notion of a *paratactic* metaphysics, in which all beings are taken to be on the same ontological level as merely physical things related to each other externally and contingently. *Hypotactic* metaphysics, on the other hand, allows for the possibility of entities that are related in internal and necessary ways, and that entities may exist on differing ontological levels. I argue that Heraclitus employed such a metaphysics and that he was a revolutionary figure in this regard.

The explanation of the relation of opposition also requires what is known as a *decompositional semantics*, as part of a theory of language. Following Jerrold J. Katz, I argue, against those who employ an extensional means of defining antonymy (semantic opposition) by way of what are known as *meaning postulates*, that what is instead required is a decompositional semantics that is able to provide an account of sense properties and relations. With regard to opposition, the connection between this kind of semantics and what I have called the *hypotactic* metaphysics of Heraclitus, is that both systems recognise the need for hierarchical structure in order to explain the necessary properties of, and relations between, opposites. I show that Katz' semantic theory is able to provide definitions of the main kinds of antonymy, in part, due to its recognition of the importance of the involvement of hierarchical structure in the form of composition and decomposition of sense structures.

In this thesis, therefore, I make use of Heraclitus to address the problem of the metaphysical status of antonymy, and I make use of contemporary scientific research

regarding antonymy, in conjunction with the philosophy and semantics of J.J. Katz, to address the problem of its semantic status.

§3 Introduction to the individual chapters of the thesis

In this section of the introduction I wish to go into more detail about the content of each of the individual chapters of the thesis than I did in the résumé earlier. I will use the statements of the aims and theses from the résumé as points of departure from which to begin my exposition in each case.

Part 1: Duality and Opposition in Heraclitus

Chapter 1: Duality in Heraclitus and in Heraclitus studies: the Unity of Opposites thesis

***Aim:** To analyse and assess some of the various contemporary positions and problems regarding the interpretation of Heraclitus' Unity of Opposites thesis, focused, in part, around Roman Dilcher's objection to the very supposition that Heraclitus holds such a thesis, and likewise to a number of issues, distinctions, and critics.*

This chapter aims to present the results of my investigations into Heraclitus' Unity of Opposites thesis, especially during the early stages of this project. I examine various positions, in the main those put forward by scholars during the 20th century and up to the present day. The chapter features in particular the work of Roman Dilcher and his responses to certain traditional interpretations of Heraclitus, e.g., that of Geoffrey S. Kirk. I employ two distinctions for the purposes of providing a broad classification of the different kinds of interpretations. These are called the Analytic/Synthetic distinction, and the Immanent/Transcendent distinction. These distinctions are used specifically in the context of Heraclitus studies and should not be mistaken for similarly named distinctions in other areas of philosophical study; I expand on this point early in the chapter.

The chapter presents certain issues that will be picked up on again later in the thesis. In particular, throughout the course of the chapter an effort is made to expost the motivations behind certain problems raised by Dilcher regarding the very supposition, contained in the traditional interpretations, that Heraclitus held a thesis of 'Unity of Opposites' as such. Although, ultimately, I will provide solutions to these problems, in Chapter 3 and, as such, I am critical of Dilcher's interpretation in this regard and indeed others, I nonetheless aim to defend Dilcher with regard to how his interpretation resolves certain interpretative issues regarding the partiality of how other scholars have treated Heraclitus' central claims. That is, broadly speaking, scholars tend to read fragments primarily from one of two standpoints, characterised by the Analytic/Synthetic distinction. I aim to defend Dilcher's thesis that both aspects are required for a complete understanding of Heraclitus' philosophy. By this I mean that, according to Heraclitus, there is no question of *either* duality being prior to unity *or* unity being prior to duality; rather, the two are on a equal footing. I show that certain criticisms of Dilcher are based on misreadings of his arguments.

***Thesis:** That two distinctions in particular are appropriate for classifying the various positions: the Analytic/Synthetic and the Immanent/Transcendent distinctions. That, against Dilcher, there is a thesis of the Unity of Opposites in Heraclitus.*

Although, in this chapter, I do not present my solutions to the problems in Heraclitus scholarship identified by Dilcher, and in particular his scepticism regarding the ascription of a Unity of Opposites thesis to Heraclitus, the thesis of the chapter is nonetheless that there is a thesis of the Unity of Opposites in Heraclitus, and that the most common differences between scholars on this matter are best presented in terms of the two distinctions mentioned. I also accept Dilcher's arguments against a Transcendent reading, that is, the reading of Heraclitus that often takes the form of an appeal to the notions of 'underlying unity', 'world law', and 'substance'. I defend the claim that Dilcher's interpretation implies a similar style of reaction to interpretations on each side of the Immanent/Transcendent distinction, to that which he expresses for those on each side of the Analytic/Synthetic distinction, a point that is never explicitly spelt out by Dilcher himself; that is, I defend the claim that, it is a consequence of Dilcher's interpretation (but not one properly recognized

by him) that *both* sides of each of these distinctions, rather than a dilemma, in each case, between the one side and the other, are necessary to understand Heraclitus' Unity of Opposites thesis. Finally, with regard to what Dilcher calls the 'dialectical' character of his interpretation, I propose that it does not accomplish its aim of providing a sound reading of what replaces the notion of 'unity of opposites' in his scheme. In fact, Dilcher's approach leaves us somewhat in the dark regarding what the intended philosophical purpose of these claims was for Heraclitus. Such a purpose is, on the other hand, in ample supply in the interpretations of Mourelatos and Moravcsik given their attention to the historical and philosophical context in which Heraclitus found himself, which is a point that I expand upon in Chapter 2.

Chapter 2: Heraclitus' Revolution against Naïve Metaphysics

Aim: To discuss the interpretations of Alexander Mourelatos and Julius Moravcsik, and to describe, explicate, and extrapolate Heraclitus' revolution against naïve metaphysics.

In this chapter, I discuss the interpretations of Heraclitus by the above mentioned scholars. What is notable about both of these interpretations, in contrast to others in the tradition, is that they do not try to run before learning to crawl. What I mean by this is that, while many other interpretations of Heraclitus often neglect philosophical inquiry and explanation of the theoretical climate that Heraclitus found himself in, the interpretations of Mourelatos and Moravcsik begin by positing well-founded interpretations of the naïve forms of theory and reasoning that prevailed prior to Heraclitus, *precisely as a necessary precondition to developing an understanding Heraclitus' philosophical motivations.*

Both scholars portray Heraclitus as a transitional and revolutionary figure in the history of philosophy. I explicate both of these scholars' interpretations with regard to the naïve theorising that preceded Heraclitus, and Heraclitus' reaction to this theorising. I also describe a number of points of confluence and divergence between these two scholars' interpretations. One of the most notable and important theses explicated in the chapter, which was put forward by Mourelatos, is that the thesis of the Unity of Opposites in Heraclitus should be interpreted as being directed against the naïve view that the relationship between opposites is external and

contingent; in reaction to this naïve view, Heraclitus' thesis posits that the opposites are *one*, in the sense of being 'internally or conceptually related', and that their relationship is a necessary one.

***Thesis:** That understanding Heraclitus in terms of his reaction to the naïve metaphysics that, in his view, preceded him provides unique solutions to a number of difficult interpretative issues. That Heraclitus had a proto-notion of essence and was not an extreme flux theorist as is often supposed.*

In this chapter and, indeed, in the next, I argue that understanding Heraclitus' philosophical motivations in terms of what Mourelatos and Moravcsik describe as his reaction to a naïve form of metaphysics, provides us with a means to arriving at unique solutions to the problems of interpreting what is often asserted to be a gnomic collection of fragments of Heraclitus' text. This same interpretative methodology also provides us with a means to arriving at philosophically relevant interpretations of those fragments that, far from being cryptic and paradoxical, are so apparently simple and obvious that they are sometimes regarded as being banal, or childish, and devoid of any philosophical relevance.

In the final section of this chapter, I expand upon the interpretative paradigm of these two scholars through an analysis of Heraclitus' example of 'The River', and Aristotle's assessment of Heraclitus' road claim. By way of an interpretation of the river fragment(s), I show that Heraclitus should not be considered to be an extreme flux theorist, and that he is interested in an investigation of the '*what it is to be*' of things. Expanding upon this point, and by way of an interpretation of the road fragment in light of Aristotle's (largely neglected) assessment of the example of the road in his *Physics*, I argue that Heraclitus can be considered to have had what I call a proto-notion of essence, or '*proto-essence*' for short.

Chapter 3: The Unity of Opposites, Markedness, and the Logos

Aim: To respond to Dilcher's rejection of the notion of the Unity of Opposites thesis in Heraclitus and to compare and draw conclusions from a comparison of the views of Mourelatos and Dilcher, regarding, in particular, Markedness and the Logos.

In this, the final chapter of part one of the thesis, I bring the views of Dilcher and Mourelatos into contact with each other. I respond to the three problems that Dilcher posed for anyone who wishes to hold that Heraclitus held a thesis of the Unity of Opposites, which were outlined in Chapter 1. They are as follows: (i) Heraclitus does not use the term *enantia* or any equivalent term. (ii) There is no clear answer to the question whether there is, over and above the many examples of opposition, a single doctrine regarding opposition. (iii) Ascribing such a doctrine to Heraclitus runs the danger of Aristotelianizing him.

I take each of these three problems one at a time, and argue for solutions to them, derived in light of the consideration of the interpretations in Chapter 2. I then proceed to show that what prompted Dilcher to raise these problems in the first place was due to a misunderstanding regarding the appearance of what has been called *Markedness* in Heraclitus' philosophy. This is a technical linguistic term, the explanation of which is best left to the chapter itself. I also point out that this is a feature of Heraclitus' philosophy that was recognised by Mourelatos, when he briefly noted what he described as being the 'leaning' of opposites, without actually realising the connection with the linguistic concept of *Markedness*.

In the final section of this chapter, I discuss the notion of the *logos* in Heraclitus. Noting that, in each of their interpretations, both Dilcher and Mourelatos respond to Willem Jacob Verdenius, I compare and contrast these interpretations before arriving at my own position regarding the *logos*, in part through employing some of the same argumentation used by Dilcher and Mourelatos. I also pick up again the claim from the end of Chapter 2, that Heraclitus had a notion of 'proto-essence', and I provide a treatment of the relationship between this notion and that of the *logos*.

Thesis: *That Dilcher was incorrect to question the presence in Heraclitus of the Unity of Opposites thesis. That Markedness further reveals the hypotactic nature of Heraclitus' metaphysics. That the logos is not the law and measure of all things, rather, it is that which the speaker is in communion with in order to have the capacity and competence to express the 'what it is to be' of the things and the reasons for the necessity of their interactions, but cannot itself be described directly.*

Apart from providing a means to respond to some of the views of Dilcher, the recognition of *Markedness* is also used in this chapter to reveal further what I have called the *hypotactic* nature of Heraclitus' metaphysics. That is, markedness entails hierarchical structure, which is anathema to what Mourelatos called the paratactic nature of the naïve metaphysics. In this regard, I discuss some linguistic literature that is appropriate for explaining the relationship between markedness, hierarchy, and opposition.

Regarding the *logos*, I accept Dilcher's arguments against the traditional 'world law' (Transcendent) interpretation, and I follow both Dilcher and Mourelatos in attempting to steer a middle course between what are broadly termed 'subjective' and 'objective' characterisations of the *logos*. I also relate this notion of *logos* to the notion of '*proto-essence*' discussed in Chapter 2, in that the *logos* is that which, according to Dilcher, stands "between the speaker and the things", and according to Mourelatos, is what we take a "detour" by way of in our expressions and understandings of the world; that is, it affords to the speaker the capacity and competence to express the 'what it is to be' of the things, despite the fact that the *logos* itself cannot be described directly.

Part 2: Duality and Opposition in Modern Philosophy of Language and Linguistics

Chapter 4: Contemporary Scientific Research into Antonymy

Aim: To outline and discuss some of the contemporary research into antonymy and opposition, in linguistics and psychology, and to outline a number of particular problems: problems articulated in this research as well as problems arising, as I argue, from it.

This chapter aims to provide an introduction to the study of antonymy (semantic opposition) in the linguistic field of lexical semantics. A brief account of some supporting empirical evidence from the psychological studies of the perception of opposition is also presented. I discuss a number of issues and problems regarding the notion of antonymy in linguistics, and provide descriptions of the main kinds of antonymy derived from this literature. This chapter is largely preparatory for what comes after it, in Chapter 5, where I address the issues raised in this chapter in light of the work of Katz.

Thesis: That, through their investigations, the linguists and others come up against the problem of the status of antonymy. That antonymy (semantic opposition) should not be defined in terms of logical opposition.

By 'the problem of the status of antonymy' I mean the problem of both its metaphysical and its semantic status; and, as we shall see, I think these are closely linked and really can be thought of as amounting to a single complex problem.

I make use of Heraclitus to address the problem of the metaphysical status of antonymy, and I make use of contemporary scientific research on antonymy, in conjunction with the philosophy and semantics of J.J. Katz, to address the problem of its semantic status.

Following the initial discussion of the linguistic literature, I provide a critical exposition of one example of the attempt to define antonymy in terms of logical opposition, by means of what are called *meaning postulates*, which was put forward

by Ronnie Cann. I return to this example again in Chapter 5, where I apply, among others, certain arguments put forward by Katz against that approach.

In the final section of this chapter, I discuss a problem that commonly arises in the literature on opposites in linguistics and in many other fields, that of the status and origin of antonymy and opposition.

Chapter 5: Antonymy and the Semantic Theory of Katz

***Aim:** To attend to the problems identified in the previous chapter, regarding the definition of antonymy in terms of logical opposition (meaning postulates), and to discuss the work of Katz on this issue. To explicate and extrapolate upon the treatment of antonymy in Katz' semantic theory. To draw out the implicit parallel with certain aspects of Heraclitus' philosophy, which were discussed in the first part of the thesis.*

In the final chapter of this thesis, I discuss the semantic theory of Katz and his arguments against the meaning postulate approach to defining semantic properties and relations. I then apply these arguments to the case of antonymy and, in particular, the meaning postulate approach put forward by Cann, which is outlined in Chapter 4. I then explicate Katz' own treatment of antonymy within his semantic theory, and show how this theory provides definitions for the main kinds of antonymy that were discussed in Chapter 4. Katz does not explicitly provide definitions for all of these kinds of antonymy; and, where he does not do so, I extrapolate from what he says about his semantic theory in order to show how it is able to provide a basis for such definitions. I then discuss the implicit parallel between Heraclitus' *hypotactic* metaphysics and his reaction to the naïve metaphysics, and Katz' decompositional semantics and his reaction to extensionally based approaches to semantics, such as that of meaning postulates.

***Thesis:** That a decompositional semantics is required to define the notion of antonymy. That Katz' semantic theory is capable of providing semantic definitions for the main kinds of antonymy. That there is a parallel between Heraclitus' rejection of naïve metaphysics and Katz' rejection of meaning*

postulates, and that both of their resultant views depend upon hypotactic or decompositional structure.

The thrust of much of the argumentation in this chapter is directed toward the thesis that a decompositional semantics, such as Katz' semantic theory, is required to define the semantic relation of antonymy (and indeed, the other semantic properties and relations). This is shown first, negatively, through arguments against a primarily extensional approach to semantics, and arguments against the use of such an approach to define antonymy and its kinds, and then, positively, by way of an explication of how an intensional and decompositional semantic theory, such as that put forward by Katz, is able to define antonymy and its main kinds.

The implicit parallel between what is treated of in the first part of this thesis and what is treated of in the second part, is drawn out largely in view of what has been concluded earlier in the thesis regarding these two topics. This section of the chapter merely allows for the opportunity to examine the two situations alongside each other, and draw out the similarity between them.

PART 1: Duality and Opposition in Heraclitus

CHAPTER 1: Duality in Heraclitus and Heraclitus studies: the Unity of Opposites thesis

Abstract of Chapter 1

This chapter is addressed to the textual basis, and the critical understanding, of the so-called thesis of the Unity of Opposites, in Heraclitus. I shall argue that, for the correct understanding of this thesis, we need to recognize that Heraclitus considers the two poles in it – Unity and Opposition – as being of equal status; and this implies that he affirms both that opposites constitute a unity and that unity involves opposition, and affirms these two claims equally. For this argument, I draw extensively on the work of Roman Dilcher, and I take issue with a variety of critics who have, in different ways, argued for the priority of the one pole over the other. However, I argue further, that Dilcher goes decisively too far when he argues that there is not a way of generalizing from the variety of examples of particular unities and dualities, with which we are presented in Heraclitus' fragments, to the ascription to Heraclitus of a general thesis of the Unity of Opposites.

Introduction

Heraclitus' philosophy has often in the past received, and it continues to receive attention for what is known as his doctrine of flux, *panta rhei* ('everything flows'). Depending on people's exposure to the literature on Heraclitus, his philosophy has often been taken to be synonymous with this doctrine. However, it is possible that Heraclitus never held this doctrine as such.¹ Indeed, what is more prominent in the

¹ Critics who relegate the importance of this thesis in Heraclitus include, e.g., Reinhardt, Kirk, Kahn, and Moravcsik. An exception among critics today, who thinks that more or less everything in Heraclitus can be traced back to the flux thesis, is Barnes, who calls the view that Heraclitus did not hold such a thesis "perverse" (1982, p. 49). However, in my view, Barnes maintains his own perversion in relation to Reinhardt's views when he says that: "Reinhardt denies that Heraclitus held a 'Flusslehre'; but he says that 'Heraclitus' fundamental idea...is the most perfect conceivable opposite of the Theory of Flux: stability in change; constancy in alteration;...unity in duality; eternity in ephemerality' (207). But that describes, in high-flown language, something very like the Theory of

fragments themselves is what is known as the doctrine of the Unity of Opposites, which can be found as a theme in a large number of fragments; that is, through Heraclitus' treatment of the phenomenon of opposition or 'duality'. During the last century of scholarship on Heraclitus, this aspect of his philosophy has been given more attention, with some interpreters even claiming that it is the main thesis that Heraclitus was putting forward (e.g., Burnet, Reinhardt, Kirk, Kahn, etc.).² Consequently, it has been important to attempt to explain the meaning of this doctrine, to spell out exactly what this notion of 'unity of opposites' stands for. The range of opinion on this matter is quite striking; this is due to the enigmatic nature of the Unity of Opposites and that it is taken to be involved with most, if not all, aspects of Heraclitus' philosophy, and interpreters link these aspects with it to varying degrees.

The treatment of *Duality* as a philosophical field of study, in the western tradition at least, can be traced back to the beginning of philosophy's self-acknowledgement as philosophy. I say this in light of the fact that, according to Charles Kahn, if the quotation by Clement of fragment 35 of Heraclitus is indeed genuine,³ we find the earliest extant use of the word 'philosopher' (*philosophos*) (Kahn, 1979, p. 105). Heraclitus employed this term in order both to distinguish his thought from that of earlier thinkers, and to thematise the search for wisdom proper. Kahn tells us that *philosophoi andres* may also be read as 'men who want to become sages (*sophoi*)' (Kahn, 1979, p. 105). The essential contrast that Heraclitus drew attention to was that of the practices of both *historiē*, focused inquiry based on direct experience, and *polymathiē*, the learning of many things, against his own *philosophia*, the love of wisdom; the difference expressed here is contained in Heraclitus' conception of what wisdom (*sophia*) is. Wisdom, for Heraclitus, is the knowledge or understanding (*noos*) of the *Logos*, which entails an understanding of what is known as his doctrine of 'the unity of opposites' (Kahn, 1979, pp. 20–22), i.e., his treatment of *Duality*. What Heraclitus meant by his use and, as far as we know, coinage of the

Flux" (Barnes, 1982, p. 478: n. 19). As we shall see in Chapter 2, these two notions should rather be considered to be quite distinct from each other (if not perfect 'opposites' as Reinhardt says).

² Roman Dilcher informs us that "it was Karl Reinhardt who succeeded in shifting attention away from the flux doctrine to the problem of opposites as being the central issue in Heraclitus" (Dilcher, 2013, p. 263; n. 2).

³ I shall refer to fragments by the standard numbering of Diels. I will also include references to this numbering system, denoted by 'D.', in square brackets for citations where the translator employs a different numbering system. In other cases, square brackets always mark my own additions unless otherwise noted.

term 'philosophy' is the search for, and acquisition of, this wisdom.

While Heraclitus censures earlier thinkers for their reliance on *historiē* and *polymathiē*, he does not dismiss these practices entirely; rather, he saw them as being important elements within his conception of philosophy, but only when they are performed in light of a more fundamental insight. This distinction, articulated by Heraclitus, between *historiē* and *polymathiē*, and his own philosophy, was explained well by Kahn when he noted that "the mere accumulation of information will not yield understanding, unless it is accompanied by some fundamental insight." (Kahn, 1979, p. 108). Heraclitus' understanding of *Duality*, his doctrine of the Unity of Opposites, is at the root of this fundamental insight, and it is what distinguishes him, as a philosopher, from earlier thinkers.

The words 'duality' or 'dual', which I am employing here, do not necessarily have an unmitigated connotation of opposition. For example, where a harmonious relationship or system is implied, such as a 'dual carriageway' being a road divided by a central barrier usually with two lanes for travelling in the *same* direction, or 'dual controls' in a vehicle that steer the *same* thing in the *same* direction, or a product advertised as having a 'dual action' or 'dual purpose' i.e., having two functions that may be applied together or separately. It is of course possible for these things to carry a connotation of opposition as well; the dual functions of the product may eventually begin actively to hamper or damage each other, one might imagine a *duel* taking place between drivers on a dual carriageway, or between an instructor and his pupil when the former attempts to wrest control during an emergency.⁴ The internal ambivalence of these words often seems to be a better fit than 'opposition' or 'opposites' for characterising this field of study and its objects. That is, at least in circumstances when the use of the words 'opposite' or 'opposition' has a tendency to lead us away from understanding the kind of unity that is involved, and especially when coming to terms with Heraclitus' doctrine.

In this chapter, and the two that follow it, I will discuss and respond to some of the prominent contemporary interpretations of Heraclitus' Unity of Opposites. The stance taken in this chapter has largely been informed by the work of Roman Dilcher, and I shall support a number of his conclusions regarding earlier interpretations of the unity of opposites, and defend him against some objections that are based on

⁴ I do not believe that there is any need to pardon the pun here, it is quite Heraclitean (cf. fragment 48; 'BIOS'); and indeed, the two words are related, e.g., in French the word *duel* may carry both meanings.

misreadings of his work. However, I shall not follow Dilcher in everything that he claims, given that, in the end, he seeks to reject the notion of there being a doctrine of ‘unity of opposites’ in Heraclitus. He does this on the basis of three main objections, which I will respond to in Chapter 3. However, I will now outline these three problems briefly here given that the discussion in this chapter will cut across them, and feature elements of them, at various stages. It will be helpful to the reader at the outset to be aware of these three problems relating to the Unity of Opposites thesis, though he or she needs to bear in mind from the start that, unlike Dilcher, I believe that the thesis survives them.

§1.1 A preliminary exposition of Dilcher’s three problems with the formula ‘unity of opposites’

In his 2013 paper, ‘How Not to Conceive Heraclitean Harmony’,⁵ Roman Dilcher has reiterated the three main problems with the interpretation of Heraclitus in terms of a doctrine of the ‘unity of opposites’, which he originally proposed in his 1995 work, *Studies in Heraclitus*.

Dilcher’s first problem is that Heraclitus does not use the Greek term for ‘opposites’; he explains that Heraclitus “refrains conspicuously from calling his “opposites” ἐναντία” (Dilcher, 1995, p. 109). He proposes that “This is a simple fact, and a fact that at the very least needs to be addressed by anyone believing in a “unity of opposites” ” (Dilcher, 2013, pp. 263–4). He also rejects Geoffrey S. Kirk’s casual explanation of this abnormality, when the latter says that “it is perhaps accidental that this word does not occur in the extant fragments” (Kirk, 1954, p. 173), on the grounds that “the ancient sources quote just the fragments we have in order to demonstrate Heraclitean ἐναντία” (Dilcher, 1995, p. 109: n. 15). However, as we will see later, in Chapter 2, there is good reason why Heraclitus does not use this word to refer to his opposites.

⁵ Prior to its publication, Dilcher presented this paper to us at the Trinity Plato Centre, Trinity College Dublin, Ireland, in March 2013. We had also the opportunity for much discussion while he was in Dublin. He was kind enough to leave me his copy of the paper before he left, which allowed me to consider the problems contained in it, prior to its being published. I wish to express my gratitude to him for that most helpful gesture. To my knowledge, this paper has been presented as early as July 2005 at the *Symposium Philsosophiae Antiquae Quintum: Polarity and Tension of Being — Pythagoras and Heraclitus*, held in Samos, Greece, and Ephesus, Turkey.

The second problem is that it is not clear that a single doctrine of the 'unity of opposites' is to be found in the fragments. Dilcher explains that the examples of opposites in the fragments are diverse and, as such, "the logic of their being one would perforce be almost equally diverse" (Dilcher, 2013, p. 264). He points out that if we try to derive a single doctrine in spite of this diversity, then either we will end up with a mismatch between some examples of opposites and the doctrine, i.e., inconsistency in Heraclitus' thought, or we will employ a vague enough doctrine to accommodate all, which will end up being one that is empty and indeterminate.

The main issue I have with Dilcher's proposed problems (i.e., the two problems just mentioned) is that they seem to rely on the assumption that there is no commonality to the various opposites, that there is no single concept of opposition, and therefore no possible doctrine of 'unity of opposites' for all occasions. However, he does not make any inquiry in this direction and does not make it explicit as an assumption. We will also see, in Chapter 2, how Mourelatos' proposal, that Heraclitus' innovation was the recognition of opposition as an internal relation, contributes to resolving this problem.

Dilcher's third problem is one that is very much part of certain broader issues that have been discussed by a number of commentators, some of whom were responding directly to Dilcher's analysis from 1995. Dilcher argued against understanding the 'unity of opposites' as being due to an 'underlying unity'. In his recent paper (2013), he reiterates his objection, which is that this is to interpret Heraclitus anachronistically, in terms of a notion that has its origins in Aristotelianism. He informs us that the term 'underlying', ultimately comes from Aristotle's notion of substance, *substratum* or *substantia* in Latin, or ὑποκείμενον (*hupokeimenon*) in Greek. I am in agreement with Dilcher that Heraclitus should not be interpreted along these Aristotelian lines. However, as we will see in Chapters 2 and 3, while most interpreters who employ the phrase 'underlying unity' are referring to the notion of a substratum, there is at least one who may not be, namely Mourelatos.

It will also be helpful to look at the broader issues mentioned above, which are primarily to do with the way in which the 'unity of opposites' has been understood in terms of two main distinctions, those being the *Analytic/Synthetic* distinction and *Immanent/Transcendent* distinction. The view that Dilcher is arguing against as 'underlying unity' is what some critics refer to as the *Transcendent* reading; and, as

such, he has been taken by D. C. Schindler to be holding an *immanent* view, though it is not clear that this was Dilcher's intention. Related to this, Dilcher employs a convincing argument against the use of the *Analytic/Synthetic* distinction. In the following sections we will look at the use of these two distinctions and some criticism of them.

§1.2 A preliminary exposition of the two main distinctions employed in the literature on Heraclitus' Unity of Opposites thesis

The Unity of Opposites can be construed in a number of different ways. In particular, two main distinctions have been made in the literature on the Unity of Opposites in the Fragments of Heraclitus; these are known as the *Analytic/Synthetic distinction*, and the *Immanent/Transcendent distinction*. In what follows I will attempt to clarify and distil these terms and describe how they have been employed by the various commentators. I should perhaps first say that it is important, given the words that we are using, not to confuse these terms with those that are more familiar in the study of modern philosophy.

Firstly, I have in mind here the distinction between *analytic and synthetic propositions*, which is found most prominently in the work of Kant and those that come after him. We are not concerned here with this distinction as such. However, this is not to say that it is entirely unrelated to the usage that refers to Heraclitus' philosophy, given that we may initially detect a relationship between these two uses at the level of the meaning of the words: 'Analysis' means breaking-up, loosening, or dividing, while 'synthesis' means putting-together or combining. As we will see in this chapter, these notions are quite central to the discussion of Heraclitus' unity-of-opposites thesis; however, we should also note that at points in the development of the modern distinction these uses come close to each other, especially in the work of those who were familiar with the fragments of Heraclitus, such as Fichte and Hegel. We will also find in Chapter 5, when we discuss the work of Jerrold J. Katz, that the notions of antonymy and analyticity (in a modern semantic sense) are intimately linked.

Secondly, we must distinguish between the usage of the terms 'immanent' and 'transcendent' by interpreters of Heraclitus' unity-of-opposites thesis, and the use of these terms in discussions of God or spirituality, and indeed metaphysics in general.

Again, we may initially find a relationship between these uses at the level of the meaning of the words, 'immanent' meaning to 'dwell in' and 'transcendent' meaning to have 'climbed beyond', or 'surmounted'. What I mean to say here is that it is the subject matter in question that is different; in the former case we are talking about ways of taking the relationship between opposites and their unity, and in the latter between the world and God, or consciousness and a mind-independent entity, etc.; in each case the second entity of each of these pairs can be taken to be immanent or transcendent in relation to the first.

§1.3 The Analytic/Synthetic distinction

This distinction is between two views or aspects that occur in Heraclitus' examples of the unity of opposites. Most interpretations recognise both of these aspects to some extent, but some place differential emphasis between them for various reasons. Interpreters claim that either one or the other aspect, or both, are present in individual fragments. I shall here attempt to provide a broad characterisation of both of these aspects.

The analytic aspect of a situation is the situation when viewed as decomposed into its elements, mereologically, with attention to difference, opposition, plurality, separation, tending-apart, etc. As a mundane example, let us take a jigsaw puzzle; if I attend to its analytic aspect I attend to the many pieces, their opposition to each other spatially and morphologically, their separation, their individual pictorial fragments, etc. If I lose a piece of the jigsaw, I have lost something of it viewed under this aspect.

The synthetic aspect of a situation is the situation viewed as a whole, holistically, holologically, with attention to unity, sameness, integration, connexion, tending-together, etc. Using the example of a jigsaw puzzle again; if I attend to its synthetic aspect I attend to the whole jigsaw joined together, the unity of the pieces with each other spatially, their connexion, the complete picture that the jigsaw makes up. If I lose something of the jigsaw under this aspect, I have lost the 'picture on the box', so to speak.

It is important to recognise, especially in the context in which we are speaking of them, that these two aspects are opposites of each other. Heraclitus' theory of opposites appears, in this sense, to be self-referential, given that if he means to say

that there is a unity to *all* opposites, then it will likewise be true that there is a unity between the analytic and synthetic features of any particular opposition. This important point – which will be discussed further later in the chapter – can of course be generalised to any opposition that we may think we need in order to understand Heraclitus’ thesis of the unity of opposites.

In order to explain better this distinction it will be helpful to look briefly at the way in which some prominent interpreters of Heraclitus use it. In his 1954 work *Heraclitus: The Cosmic Fragments*, G. S. Kirk makes explicit use of the terms ‘analytic’ and ‘synthetic’ at a number of places in his commentary and, as such, provides us with a working definition of these terms and the distinction that they refer to. Kirk regards the “synthetic view” as “seeing the underlying unity in opposites” or “the connexion between things”; and the “analytic view” as “seeing only their separateness and difference” (Kirk, 1954, pp. 176, 181).

In her 1988 article, ‘Heraclitus and the Art of Paradox’, Mary Margaret McCabe (*née* Mackenzie) distinguished between what she called the “unity of opposition”, which “asserts the fundamental connectedness of the opposites”, and the “opposition of unity”, which “stresses their essential difference” (Mackenzie, 1988, p. 9). Though she specifies some interesting corollaries of these two principles, they can nonetheless be seen to fall under the distinction between the synthetic and analytic aspects respectively. One interesting point about McCabe’s position is that, in a certain sense, it can be seen as a precursor to that of Dilcher. This is because McCabe’s interpretation does not privilege either of the two aspects over the other, a trait that she calls ‘bivalence’: “even where Heraclitus lays stress upon the unity of opposites, he relies upon their opposition for the principle to make sense. I shall call this the *bivalence* of the unity of the opposites and the opposition of unity” (Mackenzie, 1988, p. 12).

André Laks considers a related kind of distinction, between the ‘Flux’ and ‘Identity’ interpretations of Heraclitus, to have been prominent since the beginning of the history of interpretations of Heraclitus in ancient philosophy.⁶ I associate what he

⁶ My primary source for André Laks’ views on these issues is a seminar that he gave at the Trinity Plato Centre, Trinity College Dublin, in October 2014, and the discussions that followed. I was fortunate that a former student of his, and fellow student at the Trinity Plato Centre, Pauline Sabrier, took it upon herself prior to his talk to inform Professor Laks of what I was working on, and also encouraged me to send to him a short summary. I thank Pauline here again for her introductions and encouragement. Professor Laks, together with Glenn Most, is currently preparing a new Loeb edition of the texts of the pre-Socratics, due to be published in October, 2016.

called the 'Flux' interpretation with the Analytic, and what he called the 'Identity' interpretation with the Synthetic. He locates the first occurrences of these (mis)interpretations of Heraclitus, as being those of Cratylus and Parmenides respectively. Cratylus emphasised and radicalised the Flux aspect of Heraclitus' philosophy. Thus, we find it parodied in Plato as the notion of 'extreme flux' (cf. *Theaetetus* 152e, 179e–180e), which he uses as a foil for his own philosophy.⁷ On the other side, Parmenides, though he does not refer to Heraclitus by name, is taken by Laks (although he thinks it "impossible to prove") to have interpreted Heraclitus in a manner that radicalised the 'Identity' aspect to such an extent that it was seen to be a violation of non-contradiction.⁸ This interpretation of Heraclitus was later upheld by Aristotle and used as a foil in his own discussion of the principle of non-contradiction (see e.g., *Metaphysics* IV.3 1005b23–26). Laks notes that although both of the interpretations do appear in both Plato and Aristotle, Flux is more 'current' in Plato, and Identity is more 'current' in Aristotle, due to their own special interests. Laks also draws a distinction between two kinds of construal of the Identity interpretation that are present in later refinements of this tradition, that between Strict Identity ("the warm *is* the cold"), and Unity, where the opposites have something in common (e.g., "the warm and the cold have in common the substance to which they belong"). We will see later in this chapter that Dilcher also draws this very same distinction.

Laks proposed these two basic interpretations, with the sub-division of the 'Identity' interpretation making three, to be the only main possibilities, allowing, that is, for refinements, variations, etc. When I suggested to him that there may be another distinction that cuts across this one, i.e., the Immanent/Transcendent distinction, he replied that it may be the case that each of these would line-up with the two kinds of Identity interpretation, or refinements thereof. As such, he tentatively suggested that the Immanent interpretation would line-up with a dynamic Hegelian version of Strict Identity, and that the Transcendent interpretation would not be different from the (Aristotelian) Unity interpretation. However, this was objected to by Vasilis Politis, given that, as he saw it, within the Unity interpretation the unity could obtain

⁷ Also on this point, see Matthew Colvin's 2007 article, 'Heraclitean Flux and Unity of Opposites in Plato's "Theaetetus" and "Cratylus"', especially pp. 765–7.

⁸ Cf. Parmenides, fragment 6: "...to be and not to be are the same thing and not the same, and that of all things the path is backward-turning" (extract from Laks & Most, forthcoming). This reference to 'backwards-turning' (*palintropos*) is often taken, by those in favour of construing a reference to Heraclitus, as being decisive, given that the same word is used in Heraclitus' fragment 51. However, the issue is complicated by the fact that some scholars have argued that the original word in Heraclitus was in fact *palintonos*, 'back-stretched'; for example, Dilcher (cf. Dilcher, 1995, p. 109: n. 16).

transcendently, but it may also be possible that it obtain immanently instead; that is, the unity could obtain in something other than the opposites, or the unity (or the identity) could obtain but not in something other than the opposites. However, if the latter is the case this would not necessarily mean that the Hegelian Strict Identity interpretation had to be the correct one, because it is possible that there could be an immanent version of the Unity interpretation. However, he made it clear that this was not to deny that in some way the Immanent/Transcendent distinction fitted onto Laks' initial scheme, but just that it was not immediately obvious how it did so. Laks granted these objections but also reiterated that he would need to consider the matter further.

§1.4 The Immanent/Transcendent distinction

While the Analytic/Synthetic distinction is about *aspects* of a situation, the Immanent/Transcendent distinction is focused on the ontological relationship between opposites and their unity; as such, interpreters tend to subscribe to one of these ways or the other. However, some have suggested that they may both be applicable to Heraclitus' theory, for example Scott Austin, D. C. Schindler, and this is possibly implied by Dilcher's interpretation and, indeed, by Mourelatos.

The transcendent way says that the unity transcends the opposites; it is apart from them and outside of them. It is on a 'higher level' to, or it 'underlies', the opposites. The immanent way says that the unity is immanent to the opposites; it is together with them and within them. In the case of unity being transcendent of a pair of opposites, the transcendent unity is a third entity apart from the pair; conversely, if the unity is immanent in the pair, then there is no third entity apart from the pair.

What I have just outlined is what I take to be the most clear-cut way to form a binary distinction regarding the relationship between opposites and their unity. However, the actual examples of this distinction are not always so clear-cut, and can often be bound-up with other considerations. However, it will still be helpful briefly to provide a few examples.

Schindler, in his paper from 2003 in which he responds to Dilcher, employs a distinction between Transcendence and Immanence of unity, which partly matches the description of these notions that I have given above. However, it is part of my critique of Schindler's response to Dilcher that the former conflates the Analytic with

the Immanent, and the Synthetic with the Transcendent. As such, a full outline of Schindler's view will be better left until later in this chapter.

The Immanent/Transcendent distinction was also employed by the late Scott Austin in a paper from 2010. He referred to them as the 'upward model' and the 'downward model', while later in the paper he reverts to calling them 'immanent' and 'transcendent' respectively. He defines the 'upward model' as the situation in which "The unity of opposites is *in* the opposites themselves", the 'downward model' as "a unity which rejects opposites and is indifferent to them" (Austin, 2010, p. 25). There are, however, some slight differences in Austin's scheme compared with other commentators, specifically regarding the Parmenidean rejection of opposites, which I shall attend to during a fuller treatment of his scheme later in this chapter.

§2 Criticism of the usage of the Analytic/Synthetic distinction

It is clear from Kirk's exposition that he does not take the analytic and synthetic aspects to be on a par with each other; for example, he says of Heraclitus that:

[...] in all the fragments dealing with opposites he stressed the first or synthetic view against the second, conventional, analytical approach. Unlike Parmenides he did not deny the existence of the 'many things' of the phenomenal world, though he considered that wisdom lay in being able to regard them synthetically. To see the connexion between things and not their separation would presumably be just as stupid (for men, at least; cf. fr. 102) as the common, almost universal, fault of seeing the separation and not the connexion. There is no need to urge on men the fact that things are many and separate (in one way); that is why the opposite view is so strongly stressed in the fragments. (Kirk, 1954, p. 176)

From this we can see that Kirk is of the opinion that Heraclitus is primarily concerned with the synthetic view, but not to the exclusion of the analytic view. Kirk regards the analytic view to be obvious and therefore not in need of emphasis. He is indeed right to contrast Heraclitus with Parmenides regarding the denial of the many, since the analytic aspect was taken to be merely illusory by the latter; however, he does not follow through with this line of reasoning. Instead, he affords the synthetic view a somewhat higher place than the analytic, in the sense that the recognition of the latter aspect is mundane and conventional while that of the former is the preserve of the wise.

It should also be noted that Kirk regards the synthetic and analytic views themselves to be opposites of each other, and he says that while Heraclitus emphasises the synthetic side, he does not deny the analytic; Kirk explains that “the denial of plurality would involve the denial of the resultant unity, just as the abolition of ἔρις [‘strife’] would involve the destruction of the ordered cosmos” (Kirk, 1954, p. 176). Here Kirk is referring to Heraclitus’ presumed admonishment, in fragment 80, of Anaximander and Homer for their view that strife is a kind of injustice (cf. Kirk, 1954, p. 401). However, what is incongruous is that, despite regarding the analytic and synthetic views as opposites of each other, and affirming that neither view should be denied, Kirk still wishes to hold that the synthetic is *more important* than the analytic, even in cases such as fragment 10 where both aspects seem to be displayed, and in an entirely symmetrical fashion, without the merest hint of priority between them. Kirk’s translation of fragment 10 is as follows:

Things taken together are whole and not whole, something which is being brought together and brought apart, which is in tune and out of tune: out of all things can be made a unity, and out of a unity, all things. (Kirk, 1954, p. 168)⁹

During his analysis of this fragment, he says that:

[...] the two different ways of looking at things are stated as alternatives, without the suggestion that either can be entirely dispensed with; though there can be no question that the synthetic way is more significant. (Kirk, 1954, pp. 176–7)

We would not be thinking critically if we did not question here what Kirk believes that there can be no question about. The issue to be addressed is that of what Heraclitus’ main insight should be held to be. It is not enough to say that in the fragments he emphasises the synthetic aspect because it is more *significant* or *important*, as Kirk often does; it must instead be because of the place that the synthetic aspect holds in Heraclitus’ thought. Ultimately, it must be because of its relationship with the *Logos*. However, anyone who thinks that this can be found in

⁹ Kirk’s translation is a rather verbose one, containing forty-one words, given that the original Greek from which he was working contains only sixteen words. This has the consequence of a loss of the terse paratactic nature of the fragment and, as such, some of its impact and Heraclitean feel. Other translators, such as Kahn, have managed to retain these qualities of the original, thus: “Graspings: wholes and not wholes, convergent divergent, consonant dissonant, from all things one and from one thing all.” (Kahn, 1979, p. 85: CXXIV [D. 10]).

Heraclitus' own account (*logos*) as we find it on the page, has not taken heed of Heraclitus when he says in fragment 50 that it is not by listening to him but to the *Logos* that one wisely agrees that *hen panta einai*. Kirk reads this as 'all things are one', that is, synthetically, while denying the possible analytic reading on the basis that it does not accord with his reading of the other fragments (Kirk, 1954, pp. 68ff). As such, this is a thoroughly illicit move in terms of seeking for what Heraclitus' actually meant, which goes directly against Heraclitus' own injunction in fragment 50.

In contrast to Kirk, Dilcher takes a more harmonious view when he informs us that this formula, *hen panta einai*,

[...] indicates what the logos amounts to: "one – all things", a simple identity in which neither side is given prevalence. We cannot even tell which of the two is meant to be the subject and which the predicate – in their identity it certainly works both ways round. (Dilcher, 1995, p. 101)

He explains that the whole of Heraclitus' discourse is an explanation of this structure, which must be *dialectical* in nature given that "the two terms are interrelated and can only be understood one by the other" (Dilcher, 1995, pp. 101–2). Although I agree with Dilcher that the *hen panta* should be read in a manner that takes account of Heraclitean harmony or the unity of opposites, I deny that this forces us to conceive of Heraclitus' philosophy as being dialectical in the manner in which Dilcher means, which I take to be a modern notion. Some elements of Dilcher's notion of 'dialectical' will become apparent as we proceed, but I shall explain and assess Dilcher's notion of 'dialectical' later in this chapter when I will attend to his positive views more closely.

In his 1957 paper, 'Men and Opposites in Heraclitus', Kirk defends himself against another objection to his emphasis on the synthetic, made by André Rivier (1956). Speaking about fragment 10, Kirk qualifies his view by saying that:

[...] the initial emphasis, revealed in the word *συνάψεις* ['connexions', or 'graspings'], is on the connexion between obvious contraries; though again the other aspect is ultimately given equal status. It was, of course, the unity that was more important for Heraclitus—more positively important, perhaps one should say, since without the contrariety, the war or strife of fr. 53 and 80, the connexion and coherence would inevitably collapse. (Kirk, 1957, p. 162)

We may grant Kirk here that, in a certain sense, the synthetic view is more *positively* important, and as such we might assume that the analytic view is more *negatively* so.

However, this is merely an *ad hoc* response, given that what determines which way round he is construing positive and negative polarities appears to be based on his original unqualified view, or at least some unexplained association between the synthetic aspect and positivity. It is as if I was to say that the wall of a building viewed from the inside is more positively important than the same wall viewed from the outside, because I am sitting inside; or if, when flipping a coin, I always pick 'tails', and as such this side is more positively important to me for this reason, even though it may be more normal culturally to associate positivity with 'heads'.

So, we must ask why it is that Kirk insists that Heraclitus held the synthetic aspect to be more *significant* and *positively important*, and to be in need of being *emphasised* and *strongly stressed*, etc. The answer is that, ultimately, Kirk interprets Heraclitus as considering the synthetic view to be 'divine' and to be "the conclusion one would form as a result of apprehending this Logos" (Kirk, 1954, p. 70). Elsewhere, he puts it in even stronger terms:

The Logos is undoubtedly connected with the opposites, in fact it is the unity which underlies them and which binds together into one nexus all the components of the apparently discrete phenomenal world. (Kirk, 1954, pp. 188–9)

In the sentence following this one, Kirk proceeds to identify the *Logos* and God by hypothetically replacing the latter with the former in fragment 67 where God is identified with (all) the opposites (Kirk, 1954, p. 189). This is a rather artificial exercise that is lacking in argumentative force. We may grant Kirk that the synthetic view is to be associated with God, this much is unobjectionable; however, that the God or the synthetic aspect, the 'underlying unity', is to be identified or coordinated with the *Logos* is to be strongly questioned. I have already discussed above, with regard to fragment 50, one reason why we should not take this to be the case, namely, that *hen panta einai* in fragment 50 should not be read synthetically as 'all things are one' while not also admitting the opposite or analytic reading 'one is all things'; indeed, the possibility of these two readings suggests that when doing what the fragment says is 'wise' i.e., listening not to Heraclitus but to the *Logos* and agreeing or 'speaking in accord with it' that *hen panta einai*, it cannot be the case that the *Logos* here is to be identified or coordinated with only the synthetic aspect by itself (or, for that matter, only the analytic). If this was the case, then the *Logos* would be as partial as the emphasis on the synthetic aspect is without the analytic aspect.

While it is not the case that all interpreters of Heraclitus employ the terms ‘analytic’ and ‘synthetic’, most still recognise some version of this distinction, while others acknowledge but reject it. Those who take an opposing view to that of Kirk, such as Nicholas Rescher and Jonathan Barnes, hold that what Heraclitus was drawing attention to was the side of opposition, the multiplicity of the opposites, the analytic side.

In his work *Cosmos and Cognition*, Nicholas Rescher devotes a whole chapter to what he calls ‘Contrastive opposition in early Greek philosophy’. He states that his motivating thesis for this chapter is that “a significant sector of early Greek philosophy can be depicted in terms of the development and elaboration of the theory of opposites” (Rescher, 2005, p. 33). He then proceeds to outline the development of this early Greek conception of opposites (*enantia*), beginning with the pre-philosophical notions of the four combinations arising from the oppositions hot/cold and wet/dry, which produce the four elements fire, air, water and earth (Rescher, 2005, pp. 33–4). Following this, he leads us through each stage in the development of this conception, thematising each of his sections according to the chronological progression of the thinkers involved, some of whom are given a characterisation regarding their theory of opposites: Pythagoras (proliferating and arithmetizing opposites), Xenophanes (relativizing opposites), Heraclitus (normativizing opposites), Anaxagoras (partitioning and mixing opposites), Empedocles, Plato, Aristotle. These sections range in length from a single short paragraph up to two pages (on Aristotle).

Though this is very illuminating in regard to the general theme of the evolution of the conception of contrastive opposition, Rescher does not go into much depth on each thinker and gives the impression of presenting a simplified view in a number of places. However, for our purposes it will be important to note two points. Firstly, what we are here referring to as *Duality*, contrastive opposition in a general sense, has been shown by Rescher to have been an important developmental theme both for pre-philosophical cosmology and at the beginning of the early Greek tradition of philosophy. Secondly, we must pay special attention to Rescher’s interpretation of Heraclitus’ part in this development, and consider it alongside the interpretations of those who study Heraclitus’ philosophy in greater depth.

One immediate concern is that, while this development is examined by Rescher in terms of the Greek concept of *enantia*, at no point in the fragments that we

have of Heraclitus' work does he actually use the word in question. According to Roman Dilcher, Heraclitus "refrains conspicuously from calling his "opposites" ἐναντία" (Dilcher, 1995, p. 109). Dilcher also rejects Geoffrey S. Kirk's casual explanation of this abnormality, that "it is perhaps accidental that this word does not occur in the extant fragments" (Kirk, 1954, p. 173), on the grounds that "the ancient sources quote just the fragments we have in order to demonstrate Heraclitean ἐναντία" (Dilcher, 1995, p. 109: n. 15); i.e., these ancient sources were engaged in an exposition guided by a theme similar to that of Rescher's outlined above. Perhaps, then, Rescher can be forgiven for taking a similar approach. However, it cannot be inferred merely from the use of this interpretative characterisation that Heraclitus wished his readers to understand his sayings in terms of any standard conception of 'opposites' (*enantia*). If we regard Heraclitus' paired terms as being explicit 'opposites', even though he does not explicitly refer to them as such, it is probably due to the nature of some prior propensity we ourselves have to apply this concept; that is, upon encountering a pair of such terms they 'leap out at us' as being 'opposites'. However, it could well have been Heraclitus' intention to draw our attention to, and to somewhat mediate, or even overturn, this initial instinctive reaction. Indeed, one of the main aspects of Heraclitus' theory is often explained by interpreters as an attempt to explicate the unity of opposites. This objection of Dilcher's, to the interpretative use of the term 'opposites', is one of the three main problems that he raises for anyone wishing to uphold a notion of 'unity of opposites' in Heraclitus' philosophy. I will deal with these problems, and present solutions to them, in Chapter 3.

Rescher begins his section on Heraclitus' conception of 'opposites' with the unfortunate statement: "With the Pythagoreans, Heraclitus stressed the multiplicity of opposites" (Rescher, 2005, p. 37). This is manifestly not what Heraclitus stressed or, at the very least, not independently of unity. Heraclitus engaged in a polemic against Pythagoras and, indeed, against unmediated multiplicity in the form of the practice of *polymathiē* and its multiplicity of objects, the learning of many things. Although Rescher structures his interpretation in terms of this understanding ("in this light..."), he does not tell us how he arrived at this conclusion or where he got his information from; he does not mention any fragment in support of this statement, most likely because there are none. In contrast to this, the impression that is gained from the fragments by many other interpreters is that Heraclitus also emphasises

unity; for example, fragment 50 tells us that “It is wise [...] to agree that all things are one” (Kahn, 1979, p. 45: XXXVI [D. 50]).

Rescher’s view is that the opposites are merely “reagent-relative”, that is, “not absolute or inherent in the things themselves” but arising dispositionally through interactions with perceivers. The unity of opposites here obtains in things only independently of these interactions and, as such, is reduced to what he calls a “unity of indifference” (Rescher, 2005, p. 37). I think it is likely that Rescher has misconstrued the import of Heraclitus’ philosophy, and its peculiar developmental role in the evolution of the concept that he examines, precisely because his motivating thesis caused him to go looking solely for ‘opposites’ in Heraclitus and, of course, he found a great multiplicity of them. Never again should anyone wonder why Heraclitus chose to lock his text away in a temple (Diogenes Laertius, 1925, p. 413: [Book IX; 6]). In contrast to this attempt of Rescher’s, to fit Heraclitus into a certain conception of the development of the concept of opposition, we will see in Chapter 2 that much more comprehensive and convincing portrayals of Heraclitus’ place in the history of philosophy are provided by both Mourelatos and Moravcsik.

Another interpreter who emphasises the analytic view is Jonathan Barnes. I should first mention that Barnes is not at all a fan of Heraclitus or his doctrine of unity of opposites, as his much quoted expression displays no ambivalence about:

Heraclitus’ central contention, the Unity thesis, is inconsistent; it flagrantly violates the Law of Contradiction; hence it is false, necessarily false, and false in a trivial and tedious fashion. (Barnes, 1982, p. 60)

In fact, he is much like a modern day Aristotle, who attempts to logicize Heraclitus’ thought using a formal system that was devised some two and a half thousand years after Heraclitus wrote his text; it also appears that he may have neglected to read Heraclitus thoroughly first, at least according to Timm Triplett who pointed out that Barnes never speaks about any of the fragments in particular while constructing this formal straw man (Triplett, 1986). Barnes is no admirer of interpreters of Heraclitus either, referring to them as ‘wasps’: “The truth is that Heraclitus attracts exegetes as an empty jampot wasps; and each new wasp discerns traces of his own favourite flavour” (Barnes, 1982, p. 43). All of this duly noted, let us move onward to Barnes’ own interpretation and decide if he himself has any sting or not. Barnes describes what he calls Heraclitus’ thesis of ‘the Unity of Opposites’ thus:

[...] the Unity of Opposites: behind the coherent surface of things there is a tension of incompatibles; every object, however firm and enduring, is subject to contrary strains, and is constituted by opposing features. (Barnes, 1982, p. 45)

Here what is treated as obvious by Barnes, contra Kirk, is the “coherent surface” that is “firm and enduring” i.e., the synthetic aspect. This interpretation takes Heraclitus’ thesis of the unity-of-opposites to be explicating the hidden analytic view that is “behind” this synthetic coherence. Barnes considers this ‘Unity of Opposites’, or ‘Unity’ for short, to be one of three interlocking theses that Heraclitus put forward, the other two being Flux and Monism. Barnes locates the thesis of Monism in the *hen panta*, explaining that “...in some fashion the diversity of appearances is underpinned or colligated by some single thing or stuff; at bottom, all is one” (Barnes, 1982, p. 45). As such, he separates the notions of Unity and Monism from each other. This interpretative methodology is motivated by his view that the thesis of Flux is primary and that the other two theses follow from it and the particular examples in the fragments.¹⁰ Barnes sees Monism as being the least important of the three theses, given that it was to some extent already contained in the doctrines of Heraclitus’ Milesian predecessors. However, Barnes also indulges in some unjustified speculation when he proposes that “it is Flux and Unity which will seem most original and most shocking to modern readers” (Barnes, 1982, p. 58). I would even go so far as to say that this is clearly false, especially if we include among these readers interpreters such as Kirk, who emphasise the importance and originality of the synthetic view and claim the obviousness of the analytic. Indeed, in Barnes’ work we find statements regarding common experience that are directly opposed to those quoted from Kirk above:

[...] the truth is often hidden, and the fact that common experience suggests stability and coherence rather than flux and contrariety indicates not the falsity of Heraclitus’ account but the superficiality of common experience. (Barnes, 1982, p. 58)

It is my contention that, instead of emphasising the overcoming of either one of these supposedly common and superficial views in relation to their counterpart hidden

¹⁰ The centrality of the Flux thesis has been questioned by Reinhardt, Burnet, Kirk, and others.

view, Heraclitus was in fact drawing attention to this very tendency to reside with either one of these views over the other. This kind of disagreement, between modern interpreters over what is superficial and 'obvious' and what is hidden and in need of discovery, shows that we cannot jump to conclusions about what is 'obvious' in these situations. Instead, I claim that part of what Heraclitus wished us to realise was our engagement in, or with, this specific kind of oppositional thinking. This is no mere philological disagreement about a particular form of words or the precise interpretation of this or that fragment, rather, it cuts right to the core of Heraclitus' philosophy.

Ultimately, Dilcher's interpretation must be seen as providing the blueprint of a solution to this problem, given that he attempts to maintain what he calls the "dialectical back-stretched structure" of Heraclitus' thought about opposites, and therefore insists that we must keep in mind the dual aspects of the 'unity of opposites' and their relation, in order to avoid arriving "either at a tensionless unity or at an irreconcilable static opposition" (Dilcher, 1995, p. 110). Dilcher summarises his position in one particularly salient passage in his book:

[...] it is illicit to merge everything into one and to fix the point of unity. No formula which is incapable of reflecting this structure will do. It is equally impossible to distinguish two levels from one another without again accounting for their coherence. In many instances one could distinguish a level of unity and a level of diversity, a synthetic and an analytic perspective, a low-term harmony and a high-term harmony which comprises the former and its opposite. Such distinctions can be found in many interpretations but they are only sensible if the same dialectic is applied to them again. There can not be any standstill [*sic*]. This is, I think, the basic shortcoming of the weak solution sketched above, amounting to an "underlying connection" which would by itself escape this ambivalence. The dual aspect would be lost by some all-comprehensive harmony. Into whatever terms we may try to analyse these Heraclitean distinctions, they necessarily repeat the "opposition" which they are to reconcile and so perpetuate the same pattern. If the whole demands an analytic and a synthetic view these two opposed views must again be united as they were distinguished before. (Dilcher, 1995, pp. 114-5)

The essence of the point that Dilcher is making here is that we should be mindful, as indeed Heraclitus was, that the terms we use to describe the unity of opposites are themselves typically opposites. The doctrine of the Unity of Opposites appears to be self-referential and inescapably so; the oppositions repeat themselves in our analysis

of them. This shows itself through the polarisation of the interpretations of Heraclitus, for example, by the likes of Kirk and Barnes above. The lesson here is that we cannot arrive at an understanding of the 'unity of opposites' by analysing it in this manner.

I am largely in agreement with Dilcher's position regarding the perennial use of the two aspects, the analytic and the synthetic, to explicate the doctrine of the unity of opposites. Dilcher's position is, in sum, that we ought to recognise that any account that we give of the relation in Heraclitus between unity and opposition, if this account makes essential use of, or essentially draws upon, a particular pair of opposites, will be viable, and indeed coherent, only if its basic claim and purported insight can be supposed to hold good of that particular pair of opposites itself. In fact, at a certain point during this research project, I was wholeheartedly in favour of supporting this position, given that it is a compelling stance and indeed one that seems to uphold what we have come to expect of Heraclitus since ancient times, i.e., that he is an obscure thinker who is difficult to understand due to the extreme profundity of his message. Dilcher's interpretation certainly maintains this impression. However, we should ask: what have we learnt from Dilcher about the *philosophical content* of the doctrine of the unity of opposites? The answer, I would suggest, is: not much more than we knew already by listening to either of the two kinds of interpretation mentioned so far.

§3 Criticism of the usage of the Immanent/Transcendent distinction

Let us now turn to the second of our two distinctions mentioned earlier, that between 'transcendent' and 'immanent' readings of the unity of opposites. Often, the interpreters who adopt an interpretation in which the synthetic aspect has priority, also seem to adopt some form of view of the resulting unity as being 'transcendent'. In fact, as was mentioned earlier, there are those, such as André Laks and, as we shall see, D. C. Schindler, who would attempt to deny that there is any distinction at all between these two components of such a view: the analytic and the immanent; or the synthetic and the transcendent.

We should recall from earlier that Kirk characterised the synthetic view in two different ways; sometimes he speaks of it as seeing "the connexion between things" and at other times "seeing the underlying unity in opposites" (Kirk, 1954, pp. 176,

181). It is now important for us to see the difference between these two characterizations, given that in the latter characterization there is a further claim being made about the *unity* of the opposites, i.e., that it is 'underlying'. The use of this word by Kirk and others belies its subtext, the notion of *substance*, something unified that stands-under the opposites. This is a notion that is involved in many of the prominent interpretations such as those of Burnet, Kahn, Marcovich, Hussey, et al., with the effect that the phrases 'underlying unity' or 'underlying connexion' have become slogans standing in for an explanation of the 'unity of opposites'.

After I first became aware of the issues surrounding the interpretation of Heraclitus' doctrine of the Unity of Opposites, it was a 2003 paper by D. C. Schindler that further provoked my thoughts on the matter. Schindler was attempting to bring a reading of Heraclitus' philosophy to bear on post-modern discussions about *difference*. Consequently, he alters a lot of the standard terminology in an effort to bring it in line with these contemporary debates. However, I will not say any more about this aspect of his paper here; rather, I wish to focus solely on his contribution to the debate about the interpretation of the doctrine of the Unity of Opposites, which I have come to realise is quite a flawed one.

There are two main problems with Schindler's account that I wish to outline. First, he conflates the two distinctions that we have been talking about; for Schindler, the Transcendent is also the Synthetic, and the Immanent is also the Analytic. Secondly, he misreads both Hans-Georg Gadamer as holding a transcendent view, and Dilcher as holding an immanent view. Due to these confusions, Schindler attempts to solve the problem related to the Analytic and Synthetic that has already been thoroughly addressed by Dilcher, as we saw earlier.

Let us first take a look at how he conflates the distinctions. Schindler treats Gadamer's and Dilcher's interpretations as being in direct contradiction with each other. He places Gadamer on the side of *transcendence* given that, he explains:

For Gadamer, the simultaneity of unity and difference means that things which seem in ordinary experience to be opposed are in fact *immediately* one; this unity is not produced through mediation as a result of their relation (which would imply a logical succession), but is always already there, and appears suddenly in their clash. Such a perspective requires, in turn, a notion of unity as essentially *transcendent*. (Schindler, 2003, p. 415)

It is not clear to me that Gadamer can be read in this way; indeed, it seems to be based on what may be an invalid inference, i.e., that this perspective *requires* a transcendent unity. This merely begs the question whether this is the case. Indeed, as we will see in the next chapter, Mourelatos provides us with a way of construing the unity of opposites such that it can indeed be immanent without such 'logical succession' (however, I should also say that it is not entirely clear that this should be taken to be Mourelatos' own view or not, for he does not directly address the matter; I will return to this issue in Chapter 3). At any rate, there are a number of places in Gadamer's essay that he speaks of the unity as being 'within' the opposites, i.e., as immanent,¹¹ which Schindler seems to have overlooked completely. Furthermore, there is no mention in Gadamer's work of the usual markers of the transcendent view, such as the words 'underlying unity' or 'substance', which we find in other interpretations. In contrast, Schindler only provides a single reference in order to back up his view, and his brief analysis of the passage in question contains at least one probable misreading. Schindler has misread Gadamer when the latter says: "we must come to the insight that the other is always already there with it" (Gadamer, 2002, pp. 58–9).¹² What Gadamer is referring to as being 'always already there' is not a *transcendent unity* that is separate but instead merely the counterpart, or 'other', of a particular opposite, which thereby satisfies the notion of an *immanent unity*. This having been said, we will not concern ourselves any further with this confusion here.

Next, as a counterpart to his interpretation of Gadamer, Schindler places Dilcher on the side of *immanence*; he says that:

For Dilcher, by contrast, a recognition of the mutuality of opposites drives us in precisely the other direction: the moment we set the One apart, as it were, and affirm its ultimate transcendence, we privilege unity over the difference of opposites in a way that betrays Heraclitus' central insight. Dilcher thus resists any tendency to absolutize unity, to make it a place wherein difference is finally resolved and the movement of change comes to rest [...] Unity, then, is not an eternal 'self-same', hovering over the flux of becoming, but is in its very essence dialectical: it is always only the constantly self-reiterating process of things. In other words, what accounts for the profound one-many paradox in Heraclitus' thought is, for Dilcher, not the *transcendence* of unity, but rather its *radical immanence* within difference. (Schindler, 2003, p. 415)

¹¹ Cf. Gadamer, 2002, pp. 48, 58, 73.

¹² Schindler does not give an exact reference; however, I take this to be what he was referring to, given that it is the only place in Gadamer's chapter where the latter uses the locution 'always already there'.

It is evident from this passage that Schindler is conflating transcendent with synthetic, and immanent with analytic. In fact, the focus of his concern here is not so much the transcendence or immanence of unity, but rather the privileging of either the Synthetic or Analytic aspect. The background to this disagreement, which he is setting up between Gadamer and Dilcher, is that they both already accept that neither (what we are calling) the Synthetic nor the Analytic perspectives should be privileged over the other. As such, Schindler is claiming that they are contradicting themselves, but he does little to make this contradiction explicit and instead relies on what is an unexplained association of transcendence with unity and immanence with opposition. However, in addition to the above misreading of Gadamer, he compounds this further through a misreading of Dilcher. He explains what he takes to be Dilcher's mistake thus:

Now, if Dilcher is right that a unilateral privileging of unity over difference defuses the Heraclitean paradox, resolving it into merely one of its facets, his own proposal seems simply to exchange one one-sidedness for another. Submerging unity into the constant flux of change in fact does nothing more than reverse the unilateral relation, giving difference as it were the final word over unity (however paradoxical this assertion may be). We are thus once again faced with the same alternatives we saw at the outset: we must make either unity or difference ultimate in a way that leaves the other merely relative, and thus derivative. In this case, the problem remains that, however much support each alternative may have in the texts of the fragments themselves, neither accounts adequately for the whole. (Schindler, 2003, pp. 415-6)

Although the sentiment behind Schindler's objection here is pointing in the right direction, he has totally misunderstood the novelty and force of Dilcher's interpretation. Dilcher nowhere speaks in terms of a 'submerging' of unity or anything like that; in fact, this is precisely the kind of interpretation he aims to avoid. Schindler is correct that Dilcher is rejecting the hereditary transcendent interpretation of the unity of opposites, but this is not to say that he is wholeheartedly adopting an immanent view. If he was, then this would also be in contravention of the logic of the interpretation that he is putting forward. The salient passage from Dilcher's book that I quoted above (Dilcher, 1995, pp. 114-5) provides a good account of this. Dilcher is there making a general point about interpretations of Heraclitus' doctrine of the 'unity of opposites' that function in terms of *opposites*.

There is a recognition that we are drawn to interpret Heraclitus in this way, but that we do violence to his philosophy by attempting to petrify it; that is, to bring it to a standstill either through a synthetic view that fixes a point of unity or an analytic view that produces static oppositions, or indeed, by employing any other opposition, such as that between immanence and transcendence for example, without again incorporating them in a unity-of-opposites, that is, the very same thing they aim to explain. Two pages before the reference that Schindler provides for the site of his attack on Dilcher, Dilcher states this quite plainly:

If we unduly single out one “element” or aspect – i.e. without at the same time referring it back to its counterpart – we will end either at a tensionless unity or at an irreconcilable static opposition. (Dilcher, 1995, p. 110)

All of this has undoubtedly been missed by Schindler since he spends the remainder of his paper attempting to carry-out something very similar to what has already been addressed by Dilcher; that is, in some manner to affirm an equality of both aspects.¹³ However, Schindler attempts this without the central insight behind the quotation above, which is that the *logos* accounts for the unification of all diversity through what Dilcher calls a “dialectical process” (1995, p. 101). Dilcher summarises such a misunderstanding of the ‘Heraclitean dialectic’ thus: “not keeping both sides apart and taking them together, resulting in the mistake to extract one most beautiful order out of it” (Dilcher, 1995, p. 121).¹⁴ As has been explained above, Schindler is also operating with the handicap of having conflated the two distinctions that I have been discussing.¹⁵ Having said this, it is not clear that Dilcher fully addresses the Immanent/Transcendent distinction, that is, apart from rejecting the transcendent side.

¹³ Schindler has recently led others astray through his misreading of Dilcher. For example, in a dissertation by Julia Sushytska, she says that “Schindler rightly criticizes Dilcher for a one-sided approach” (Sushytska, 2008, p. 53: n. 196), but without presenting any independent justification of this criticism.

¹⁴ ‘Beautiful’ is here to be read derogatively, or with irony.

¹⁵ I had an opportunity to discuss with Dilcher in person about this, during the period of his visit here to Trinity College Dublin in March 2013. He agreed that Schindler’s methodology seems a little odd, and that he had been misunderstood by him to be holding a view of the ‘unity of opposites’ as being immanent. Although he has not addressed this in print himself, he seemed enthused at the prospect of me doing so; given that, as he said of me at the time, “this man understands my book even better than I do.” One cannot hope for higher praise or greater encouragement (or, perhaps, embarrassment) than this, and I thank him for it again here.

In a 2010 paper presented by the late Scott Austin (who, incidentally, was a former student of Alexander Mourelatos), he expressed the necessity of distinguishing between two senses in which the unity of opposites could be taken. At first he names these the 'upward model' and the 'downward model'; later in the paper he reverts to calling them 'immanent' and 'transcendent' respectively. The first he defines as the situation that "The unity of opposites is *in* the opposites themselves", the second he says is "a unity which rejects opposites and is indifferent to them" (Austin, 2010, p. 25). I should point out here that the context of these remarks is slightly different to that of other commentators; Austin is not here presenting these as alternatives for the interpretation of Heraclitus, rather, he associates the immanent-upward model with Heraclitus, and the transcendent-downward model with Parmenides, hence the references to the rejection of, or indifference to, opposites. Explaining further he says that:

I shall call the first model the *upward* model: the opposites are one, and the unity of opposites is visible, is manifested, in and through the opposites themselves. The unity does not exist apart from them. The second model is the *downward* model: the unity is above the flux of opposites, separate from them, holding them in contempt. (Austin, 2010, p. 26)

Austin speculates that Plato and Aristotle were attempting to combine, and resolve the dispute between, these two views each in their own way. However, it is notable that he has asked the question "is it possible for the unity of opposites to be immanent in the opposites themselves and also transcendent of the opposites?" (Austin, 2010, p. 26). He suggests that this may even have been present in the pre-Socratic doctrines of Parmenides and Heraclitus, and also mentions the Chinese Daoism of Lao-tzu as a possible example of this view. However, I feel that it may be unwise to conflate the views of these three philosophers like this, in particular those of Parmenides and Heraclitus, since a large body of evidence has been built up to suggest that their views were thoroughly opposed to each other, and indeed this is what most interpreters claim each in their own way. What is most interesting for my project is his further question of "what if the transcendent *Logos* and the immanent flux were thought together by Heraclitus himself?" (Austin, 2010, p. 28). While I feel that Austin's view is flawed given that he places the *Logos* on the side of the transcendent, while flux is placed on the side of the immanent, it is still an interesting question that he raises. He also makes associations between the transcendent as

metalanguage and immanent as first-order language. There may be some merit in these assertions, however, as one would expect, he does not get very far with all of these complicated issues in a paper that is only five pages long.

A few years later, and shortly before his death in 2014, Austin published a book entitled *Tao and Trinity: Notes on Self-Reference and the Unity of Opposites in Philosophy*, which was focused on covering some of the same ground of which we can see the beginnings in his short paper from 2010. However, by this time a number of other associations with later philosophy and Christian theology had been added to the mix, which broadens the issues from pre-Socratic philosophy that he had focused on originally, somewhat excessively. Also, the issue of whether Heraclitus thought the immanent and transcendent together seems to have been dropped in favour of upholding the original characterisation of Heraclitus as holding an immanent view and Parmenides holding a transcendent one.

§4 The higher and lower orders of duality in the unity of opposites

In the case of Heraclitus' fragments, dualities appear most recognisably in the form of antonyms, i.e., pairs of opposing terms juxtaposed in a particular fragment. When we interpret a fragment of Heraclitus' that contains a duality it is problematic (for us), given that what he might mean is dependent on whether we take him to be emphasising either the opposition or the connection between the two terms, i.e., their *opposition* or their *unity*.

However, this interpretative problem itself can be seen as being based on a more general duality, a 'higher order' duality in relation to the others. There is some evidence that Heraclitus was aware of this more general pattern to dualities and sought to bring it to light also, given that there are fragments in which he does seem to be addressing dualities in a more general sense. Edward Hussey draws attention to this aspect of Heraclitus' thought about Duality when he identifies a threefold movement within the fragments that involve the doctrine of 'unity-in-opposites':

Unity-in-opposites appears in Heraclitus in three distinct ways: (1) He presents, in suitably plain language, mostly without comment, *examples* of the pattern taken from everyday experience; (2) he *generalises* from these examples, in statements where the language verges on the abstract, seemingly in an attempt to state the pattern in itself; and (3) he *applies* the pattern in the construction of theories, in particular to cosmology and to the theory of the

soul. (Hussey, 1999, p. 93)¹⁶

The first movement, (1) in Hussey's schema above, characterises Heraclitus' treatment of individual examples of dualities and their unities. The second movement, (2) above, characterises how Heraclitus also "offers his own explicit statement in general terms of what he takes to be essential in the pattern he has noted" from the multiple examples used in (1) (Hussey, 1999, p. 96).¹⁷ The more generally orientated fragments employ abstract dualities that seem to describe a *higher order* of dualities and unities in Heraclitus' theory.¹⁸ These abstract terms are always implicitly involved in the individual examples (1), of which there is a general pattern (2), and, as such, impact greatly upon the understanding of this theory as a whole. The third movement, (3) above, may be less interesting from our modern perspective given that it is the application, by Heraclitus, of the generalised pattern in (2) to the fields of cosmology and the theory of the soul in a manner that was relevant to his time. However, even if the subject matter of these theories may not be relevant to today's discourse, the manner in which the general pattern is applied to these fields may still be of use and significance.

It will be helpful at this point to consider some examples of the first two movements that Hussey outlines. We shall first examine an example of the unity of opposites theme in the Fragments, corresponding to (1) in Hussey's schema. Throughout this examination we must keep in mind the more general duality between *unity* and *opposition* that is implicit in these examples. The insights of Charles Kahn will also be instructive to consider here given that he makes similar suggestions to Hussey regarding the generality of some fragments over others. We shall begin with fragment 57:

The teacher of most is Hesiod. It is him they know as knowing most, who did not recognize day and night: they are one. (Kahn, 1979, p. 37: XIX [D. 57])

¹⁶ References to article sections have been removed.

¹⁷ Hussey is here referring specifically to fragment 51: "They do not understand how the diverging agrees with itself: a structure turning back on itself [*palintropos harmonie*], such as that of the bow or of the lyre (B51)" (Hussey, 1999, p. 96). However, other notable examples of (2) would be fragments 10 and 67, noted also by Kahn in this regard (cf. Kahn, 1979, p. 281).

¹⁸ Hussey himself uses the term 'higher-level opposition' at one point: "Unity-in-opposites, as displayed in cosmos and soul, exemplifies another higher-level opposition: that between conflict and law" (Hussey, 1999, p. 106).

Kahn sees fragment 57 as being a “kind of emblematic statement for the doctrine of unity or interdependence between opposing powers that constitutes the general pattern and the formal theme for Heraclitus’ teaching” (Kahn, 1979, p. 109). This is due to the fact that it is a statement of the contrast between Hesiod’s *polymathiē*, his ‘knowing most’, and the philosophy of Heraclitus; i.e., Hesiod lacks the fundamental insight regarding the unity of opposites.

Kahn considers this unity to consist in that the duration of day and night taken together is always the same, i.e., the twenty-four hour cycle; it is “what the Greeks later called the *nychthēmeron*” (Kahn, 1979, p. 109). Unfortunately, Kahn does not give any directly relevant evidence that this is what Heraclitus meant in this particular fragment; he relies on association with other fragments in which he claims Heraclitus refers to the solstices, and on the doxographical reports regarding the Milesians’ and earlier studies of the changing length of night and day in this regard (Kahn, 1979, p. 109). It is interesting that after his long explanation of this unity, by appeal to knowledge of the solstices and durations of day and night, Kahn seems to revert quickly to a simpler view in order to make his point, which is supported by another (and, by his own scheme, less reliable) fragment: “If there were no sun, it would be night” (Kahn, 1979, p. 51: XLVI [D. 99]). He says of this that: “In this apparently childish remark lies the solution to our riddle and the real point of attack on Hesiod”; he concludes from this that day and night are “complementary aspects of a single unit” (Kahn, 1979, p. 110).

I confess that, much as I agree with Kahn’s conclusion (that day and night “are complementary aspects of a single unit”), I do not at all see how this can be deduced from fragment 99. Surely, if this fragment was to have this consequence – i.e., the complementarity of day and night – then it would have to have said that if there were no sun, then there would be neither day nor night; and this it does not, as it stands, say. I propose, also for this reason, that we accept Alois Patin’s emendation, that is, his insertion of *οὐκ* (‘not’, ‘no’) (Patin, 1885, p. 32). If we do so, then what the fragment says is: ‘If there were no sun, there would be no night’, which also gives to the fragment the familiar feel of apparent paradox that we expect of Heraclitus’ remarks.¹⁹ This is precisely what is needed for the complementarity conclusion to follow. Whereas I do not follow Patin’s particular explanation of the way in which a

¹⁹ For comparison, consider some of the other apparently paradoxical remarks that he makes regarding the sun, for example, that the sun’s breadth is that of a human foot (fragment 3).

single event is the cause of both night and day (he talks of the sun being extinguished, this giving rise to black, nocturnal vapours, etc.), I believe, as I will argue presently, that Heraclitus is indeed thinking of a single event as being the cause of day and night at once. Of course, the insertion of a word such as this, the negation 'no', and consequent emendation of a fragment, is no light matter, and it requires some explanation of how the 'no' could have dropped out. While I am in no way competent in such textual matters, it does seem to me that there is a plausible explanation of how this could have happened; namely, while copying the fragment, the particular scribe in question may not have been sensitive to the subtleties and apparent paradoxes that are peculiar to Heraclitus, and may simply have gone for the literal, and rather mindless (indeed, as some critics say, "childish"), reading, that without the sun there would be just darkness and night.

We must admit that, indeed, the *durations* of night and day *are* complementary and change with each other throughout the yearly cycle, to an extent that is noticeable to anyone who is not living near the equator. However, G. T. W. Patrick tells us that an interpretation based on day and night being "similar divisions of time (!)" was proposed long ago by Schuster and was ridiculed by Teichmüller; Patrick himself describes this interpretation as "childish" (Patrick, 1889, p. 33). Furthermore, Heraclitus does not speak explicitly of *duration* here, and the one clue that we do have is that of the polemic against the views of Hesiod. Hesiod gave night an essential priority in that it produced day, and also held that the two were exclusive of each other through their succession and cannot co-exist (Kirk, 1954, p. 156). Both Kirk and Marcovich do not think that a reaction to the latter view is involved here (Marcovich, 1967, p. 223). Kahn, however, seems to accept both but pays more attention to the latter as an object of Heraclitus' polemic (Kahn, 1979, p. 109). In reaction to either or both of these views, Heraclitus says that Hesiod did not recognise that day and night are one. If we consider this to be a response to both of Hesiod's views, we may take it as meaning that neither day or night has priority and that they are not exclusive of each other in at least some sense, indeed for the same or similar reasons in both cases. In Chapter 2, when we discuss Mourelatos' interpretation, we will also consider Heraclitus' rejection of the *contingency* of the mutual exclusion of day and night implied by Hesiod's portrayal of the relationship in *Theogony* 748–54.

I wish to propose an interpretation in which day and night can indeed be seen to be one in this way, without appeal to such specialised astronomical inquiry as that

of the Milesians, or the mere triviality that one always follows the other. From our modern perspective we know that day is produced by the light from the sun falling on the Earth; equally we know that it is always night in the opposite hemisphere (approximately), which is in shadow at the same time. All that this explanation really requires is knowledge of the production of shadows by an object being lit from one side; this would seem to satisfy Marcovich's intuition that "The unity of Day and Night was meant by Heraclitus as something self-evident or easily understandable", without the triviality that he relies on of an explanation by appeal to their succession (Marcovich, 1967, p. 223). Heraclitus was no doubt aware of the theory of a spherical Earth given that we know he was acquainted with the teachings of Pythagoras who apparently held this view (Diogenes Laertius, 1925, pp. 343, 365: [Book VIII: 23, 48]),²⁰ but even this fact is not required for this understanding of day and night; it is just as compelling and true in the case of a flat earth. We can see from this that night is present at the same time that day is present on the Earth; they are two different aspects of the same event, which is produced through the interaction of sunlight and the Earth. The unity of day and night in the example consists in the fact that they are correlative aspects of the same event; each cannot be present independently of the other and neither has priority over the other.

This interpretation captures much more directly the unity between night and day than that which relies on the measurement of durations or the succession of phases; that the earth is revolving while orbiting the sun (or that the sun is moving around the earth) is merely accidental to this relationship between day and night, in which they are always essentially one. We could even imagine a situation where the durations of day and night do not sum to a twenty-four hour cycle; while travelling at a high velocity around the earth, e.g., on board a fast aeroplane or a space station, or even on another planet. This is not to say that the complementary relationships of duration suggested by Kahn do not also obtain and, indeed, they may also have been views that Heraclitus held or, put less speculatively, consequences of the same view. However, we cannot claim that they address the unity of night and day, in the sense of their essentially arising together and the necessity of their co-existence and mutual exclusion. We will come to consider this aspect of the meaning of the fragment again

²⁰ Pythagoras is mentioned derogatively in fragments 40, 81, 129. The polemic is primarily against reliance on *polymathiē* but also against Pythagoras' usurpation of the views of others.

in the next chapter, when we discuss Mourelatos' view that it was just this kind of necessary relationship between opposites that Heraclitus was drawing attention to.

We shall now turn to an examination of one of the fragments that states a more general pattern of duality and the theory of the unity of opposites, which corresponds to (2) in Hussey's schema quoted earlier. Fragment 67 achieves this by providing a rich variety of dualistic relations corresponding to the general pattern that is involved in Heraclitus' theory of the Unity of Opposites:

The god: day and night, winter and summer, war and peace, satiety and hunger. It alters, as when mingled with perfumes, it gets named according to the pleasure of each one. (Kahn, 1979, p. 85: CXXIII [D. 67])

Kahn places this fragment along with fragment 10,²¹ at the end of his arrangement because he thinks that "Both in form and content these two fragments serve as complements to one another, providing a kind of summary of Heraclitus' thought." (Kahn, 1979, p. 281); indeed, this concurs with (2) in Hussey's schema, where Heraclitus begins to generalise upon the particular examples of the unity of opposites already given. Indeed, of the dualities mentioned, 'war peace' is the only one which does not occur in any other extant fragment, although the term 'war' does occur in a different context as a principle of antithesis (Kahn, 1979, pp. 278–9); the first of these, 'day night', as we saw earlier, was considered by Kahn to be emblematic. However, the most striking feature of this fragment, when taken by itself, is its form.

Kahn notes a contrast between the first and second sentences of this fragment. The first sentence consists only of nine nouns (the conjunctions do not appear in the Greek) with the initial one 'god' being distinguished by the definite article, i.e., the sentence lacks syntax; the second sentence consists of three verb clauses with no subject noun, i.e., the sentence lacks a subject (Kahn, 1979, p. 277). Thus, each characterisation contains what the other lacks; this could be taken to indicate a formal one/many duality between the unity of 'the god' arising from the plurality of oppositions taken together as a formal pattern, and the process by which difference, or differentiation through naming, and plurality in turn arise from this unity.

Both Kahn and Marcovich identify a further two dualistic structures that are involved in the first sentence: First, between the initial two pairs of terms considered

²¹ Kirk places these fragments in the same group as each other (Kirk, 1954, p. 166), but Marcovich does not (Marcovich, 1967, p. 101).

as *cosmological* (or *natural*) i.e., ‘day night’ and ‘winter summer’, and the latter two as *anthropological* (or *social*) i.e., ‘war peace’ and ‘satiety hunger’ (Kahn, 1979, p. 278). Second, Marcovich notes that these eight terms are further related through the chiasmic compositional pattern “a b : b¹ a¹ ; c d : d¹ c¹”, as was originally noticed by Deichgräber (Marcovich, 1967, p. 415). Kahn interprets this pattern in terms of a duality between positive and negative connotations; on the cosmological side the positives of ‘day’ and ‘summer’ are on the outsides of the four term structure, while on the anthropological side it is the negatives of ‘war’ and ‘hunger’ that are on the outside (Kahn, 1979, p. 278), which structurally reinforces the contrast involved in the former duality; as such, the structure might be better schematised as: a b : b¹ a¹ ; b² a² : a³ b³.

In addition to these two I posit that there is also a third, a further outer chiasmic structure, present here between the terms when taken as the original four dualities, which could be distinguished by a further duality such as greater/lesser, or even macro/micro, or something to that effect; i.e., ‘day night’ is the lesser of the greater ‘winter summer’, while ‘war peace’ is the greater of the lesser ‘satiety hunger’, giving us the chiasmic structure: a b ; b¹ a¹. This is suggested by the mathematical properties of the fragment, given that the divisions that the above mentioned commentators have applied to it leave out this possible step. With the inclusion of my suggestion (denoted by square brackets) we now have a complete set of chiasmic structures (separated by commas) with divisions ranging from the sentences (in upper case) down to the individual terms of the first sentence: A B, a ; b, [a b ; b¹ a¹], a b : b¹ a¹ ; c d : d¹ c¹, or rather, as Kahn’s positive/negative duality suggests: a b : b¹ a¹ ; b² a² : a³ b³. Indeed, the inclusion of this chiasm, which completes the overall structure, would seem to suggest a satisfactory explanation for why the original four particular dualities of the first sentence were chosen; i.e., they fit this complete structure.

Thus, in this fragment, along with the four *explicit* particular dualities of the first sentence, we have a further system of four *implicit* abstract dualities that are implied by the compositional form, each of which operating within the structure of the next while also defining their own chiasm; i.e., the abstract dualities: pattern of unification/process of differentiation (nouns/verbs), natural/social (macrocosm/microcosm), greater/lesser (macro/micro), and positive/negative. An important point that should be elucidated here is: that we are only able to pick out

this unified pattern if we accept the implied dualities involved in it; i.e., it is our recognition of their various oppositions that produces the unified and complete structure of the first sentence. Without this, the unification of the four explicit dualities does not arise and 'The god', which is identified with their pattern of unity-in-opposition, remains divided and partial.

The first of the above mentioned implied dualities is naturally separated from the others, through being one that is between the forms and themes of the two sentences; as opposed to the others, which are between the terms of the first sentence taken as structured by three different dualities. This would seem to suggest that this first implied duality is somehow more overarching, or occupying a higher status in this structure of dualities than the others in the first sentence, that is, than both the explicit (particular) and the implied (abstract). Indeed, this would seem to fit well with the characterisation of the duality between unity and opposition as being of a higher order.

§5 The use of the concept of 'opposition' and the formula 'unity of opposites' for interpreting the fragments of Heraclitus

There is an important question as to whether or not attributing a doctrine of 'unity-of-opposites' to Heraclitus, as almost all interpreters have done, is justifiable as an interpretative methodology. Hussey's student, Roman Dilcher, presents us with an interpretation of Heraclitus' treatment of Duality that is novel in the history of the scholarship on this matter, given that it rejects the use of the interpretative formula 'unity-of-opposites', or *coincidentia oppositorum*, as referring to a single comprehensive principle that Heraclitus held. We have already seen this point anticipated earlier through the fact that, as Dilcher points out, there is no mention of 'opposites' (*enantia*) in the fragments.

Instead of resorting to this standard characterisation of Heraclitus' philosophy in terms of a 'unity-of-opposites', Dilcher looks to the actual instances of formulae to be found in the fragments themselves. He identifies fragment 50 as formulating what he calls "the principle insight of Heraclitus' philosophy: ἐν πάντα εἶναι" (Dilcher, 1995, p. 101). Fragment 50 says:

It is wise, listening not to me but to the report (*logos*), to agree <and say> that all things are one. (Kahn, 1979, p. 130: XXXVI [D. 50])

Dilcher would object to the above translation given that that this formula, *hen panta einai*, “indicates what the *logos* amounts to: “one – all things”, a simple identity in which neither side is given prevalence. We cannot even tell which of the two is meant to be the subject and which the predicate – in their identity it certainly works both ways round” (Dilcher, 1995, p. 101).

As we saw earlier when discussing Kirk’s views, Dilcher explains that the whole of Heraclitus’ discourse is an explanation of this structure, which, as he puts it, must be *dialectical* in nature given that “the two terms are interrelated and can only be understood one by the other” (Dilcher, 1995, pp. 101–2). The notion of ‘dialectical’ employed by Dilcher here is a decidedly modern one. It is not akin to the notion of ‘dialectical’ employed by interpreters such as M. M. McCabe, who Dilcher thinks of as having employed a largely “sound dialectical interpretation”, although he disagrees “in principle on the background and implicit aim of the dialectic” given that he reads this aim, as intended by McCabe on his understanding of her, as being the establishment of a kind of transcendent interpretation of unity. Contra this understanding of unity, he says that it is instead “the ultimate unity and totality of the world *which is again and again contemplated*” (Dilcher, 1995, p. 115: n. 27).²² Thus, Dilcher is not merely objecting to the implicit aim of the dialectic employed by McCabe, he is objecting to the very notion of the kind of dialectic that intends to reach a stable outcome. He makes this quite clear later in the same chapter when he says that:

[...] the dialectical understanding can be described as a process of successive grasping and abandoning. No fixed knowledge is preserved; no firm opinions and doctrines are constructed which one could ultimately hold fast to and carry along [...] Heraclitus’ central insight tends to slip away, escaping out of one’s hands just when one is close to getting hold of it. (Dilcher, 1995, p. 118)

Although I accept certain elements of Dilcher’s criticism against other interpreters, especially with regard to the privileging of certain aspects of Heraclitus’ notion of the unity of opposites over other aspects, I do not agree that this forces us to accept that

²² The italics are my own emphasis.

Heraclitus' philosophy was 'dialectical' in the sense in which Dilcher means this. Although Dilcher does not say so explicitly, the notion of 'dialectical' employed by him seems to be one that has a post-modern heritage, in that it shows a certain deference to deference. Or, if not precisely in this post-modern sense, at least to the so-called dialectics of Hegel, where at each stage one's conceptual understanding of the Absolute reality, or whatever else is under consideration, must give way to a new round of dialectical sublimation. It is clear that Hegel was influenced by Heraclitus; however, we should not suppose that Heraclitus was a proto-Hegelian any more than Plato was.

Dilcher explains that the traditional interpretative assumption of a formula of 'unity-in-opposites' is usually invoked to counter the problem of the recurrent structure and circularity inherent in Heraclitus' philosophy (Dilcher, 1995, p. 103). However, he says that it "does not offer, at any rate, a solution as neat as may appear" (Dilcher, 1995, p. 104). We will return to this issue again in Chapter 3 when we consider it alongside what Mourelatos called the 'leaning' of the opposites, and the linguistic phenomenon of *Markedness*.

Dilcher says that the relation between the 'opposites' and their 'unity' can be accounted for in two ways.²³ The first way is a transcendent reading where, although opposites remain phenomenally distinct and not identical, they have an "essential connection, interdependence, or co-existence"; "they are one in that they form a continuous whole." Thus, this unity is transcendent in that it is "'underlying" or on "a higher level" " (Dilcher, 1995, p. 104). Dilcher shows through a number of quotations that this is generally the kind of reading adopted by the most prominent commentators of recent times, i.e., Kirk, Marcovich, and Kahn, but that this reading relies on imputing an "archaic liberty", a vagueness or looseness of speech, to Heraclitus (Dilcher, 1995, pp. 104–5: cf. nn. 5 & 6). The second way is a stronger but more paradoxical reading where the unity is conceived as an "identity of opposites". This reading led to mixed reactions, with some commentators condemning Heraclitus for committing logical fallacies, while others engaged in apologetics based on him not possessing "the means to analyse his concepts properly" but yet drawing attention to

²³ As was mentioned earlier, André Laks also draws the same distinction, that between two ways of taking the relationship between unity and opposition, in a very similar manner. The first of Dilcher's ways described above corresponds to Laks' 'Unity' category of interpretation, while the second way corresponds to his 'Strict Identity' category of interpretation.

the logical paradoxes and thereby advancing the study of logical analysis (Dilcher, 1995, p. 105). However, Dilcher points out that:

[...] if we look round, no blatant contradiction is readily forthcoming. In no place could Heraclitus successfully be convicted of a plain logical blunder. There is not a single fragment which states a formal contradiction. Some fragments can certainly be read like that, but only at the cost of excessive simplification. (Dilcher, 1995, pp. 105–6)

One of Dilcher's main targets here is the interpretation put forward by Barnes, which, he says, twists Heraclitus' examples of opposition "into one thesis of the sort that can be expressed in modern logical notation" and that in some cases he "wilfully drops the qualifiers which Heraclitus in fact has given" (Dilcher, 1995, pp. 105–6: n. 9). Although Dilcher is against viewing Heraclitus' claims as a violation of the principle of non-contradiction in its explicit formulation, he says that:

[...] concerning the law of non-contradiction, we are certainly not being anachronistic in clinging to it even before its explicit formulation. It is implicitly operating in the common-sense and the straightforward way of thinking which Heraclitus intends to challenge. It is in this way indirectly presupposed by Heraclitus' very delight in involving the reader in paradoxes. (Dilcher, 1995, p. 107)

Thus, according to Dilcher, this 'common-sense', or pre-theoretical, notion of a principle of non-contradiction is presupposed by Heraclitus' contemporaries, and is precisely what he relies on for the production of (apparent) paradoxes. I certainly agree with Dilcher on this point, at least, as far as he spells it out. That is, we should not imagine that the people of Heraclitus' time were incapable of grasping something like a pre-theoretical notion of a principle of non-contradiction (PNC); one reason being simply that those who admit of contradiction in their daily practical activities would be bound to make errors, some more serious than others, which would result in dire consequences for their wellbeing. This does not, however, mean that they would immediately grasp a fully-fledged PNC with all of its attendant qualifications (e.g., at the same time, in the same relation and respect, etc.), and, as such, would nonetheless become confused by the apparent paradoxes presented by Heraclitus.

However, it is still important to ask at this point, as Dilcher fails to do, how exactly we should explicitly formulate such a PNC, if we were to do so, in order to determine whether or not Heraclitus could be seen to be violating it. As was

discussed earlier, Dilcher himself puts forward the view that there is no notion of substance in Heraclitus. Indeed, we will see this point made again in Chapter 2 when we discuss the views of Mourelatos and Moravcsik. As such, Heraclitus cannot have understood the PNC, as Aristotle can be seen to have done, in terms of the substance/attribute distinction. To read Heraclitus in such a manner, as Dilcher has rightly pointed out, would be an act of excessive simplification or, as perhaps we should say now, a gross distortion.

We should now ask if there is another way of formulating PNC available to us, which does not involve the substance/attribute distinction and the risk of distortion of Heraclitus that this entails, and which may be more appropriate to Heraclitus. The answer is that there is indeed such a formulation, to be found in the work of Plato in the *Republic* book IV at 436a–441c, and especially 436b–e. During a discussion regarding the powers of the soul, Plato provides us with a certain formulation of PNC, thus:

“It is obvious that the same <thing> will not be willing to do or undergo opposites in the same <part> of itself, in relation to the same <thing>, at the same time.” (Plato, 1997, p. 1067: 436b)²⁴

Even if Plato had used the term ‘part’ (μέρος) in this passage (i.e. 436a–441b), this would not necessarily have had to be taken to refer to a material part of something. Rather, μέρος may also be used to refer to aspects of a thing that cannot be directly identified with a material part, such as, for example, geometrical aspects. The ambiguity, or at any rate flexibility, of this word is best explained as being a symptom of what Mourelatos and Moravcsik saw as being a transitional period in the history of philosophy, i.e., that of the transition from naïve mereological or compositional theories, to attributive or ordering theories. (We will return to this point again in greater detail during Chapter 2, when we discuss the interpretations of these two scholars.) As it is, however, Plato does not use this term, μέρος, at all in this extended passage (436a–441b); the terms he finally settles on for these powers of the soul

²⁴ The angled brackets themselves are my addition; they indicate the words of this translation that are not supplied in the Greek, and which are at issue in our discussion of this passage. Plato later repeats his statement of the principle after rejecting two apparent counterexamples: “No such statement will disturb us, then, or make us believe that the same thing can be, do, or undergo opposites, at the same time, in the same respect, and in relation to the same thing” (Plato, 1997, p. 1068: 436e).

being, rather, *eidos* and *genos* (see 437c1, 439e2, 440e8&9, 441a1, 441c6). This notable fact may, it seems to me, be significant in its own right; it may also help explain why, when, as we shall see, Plato introduces the example of the top spinning to illustrate the observance of PNC, and does so after having illustrated this through the example of the person standing still but moving their hands, he expressly refers to the spinning top example as subtle and sophisticated (*kompson*), when compared to the example involving the person. This, it seems to me, may well be because he wants to indicate that the person example may be misleading because it clearly involves parts, Plato's point being that the presence or otherwise of parts is irrelevant to the overall point he is making.

Following his statement of the PNC, Plato deals with two apparent counterexamples; that of a person standing still but moving their hands and head, and that of a top spinning while remaining fixed on one spot and not wobbling. For the purposes of comparison with Heraclitus, the example that will be most apposite is that of the spinning top (*Rep.* IV 436d–e). The apparent counterexample suggested here, by Socrates' hypothetical interlocutor, is that spinning tops are things that may both stand still and move, which are opposites, as indeed may anything else that rotates while remaining fixed on the same spot. However, Socrates rejects this counterexample by pointing out that "it isn't with respect to the same parts of themselves that such things both stand still and move" (Plato, 1997, p. 1068: 436d). Since the common spinning top is a solid material object (discounting other possible kinds of top), it does not make any sense to say that its peg is not also rotating. As such, the example must refer to the *axis* of the top, whose only possible freedom of movement is a wobble from side to side. A particular geometrical aspect, rather than a 'part' in any sense, is employed in this case; that is, as opposed to the hypothetical interlocutor's earlier less sophisticated example of a person who stands still but waves their hand, which merely refers to a material part.

The importance of the example of the spinning top is that it provides us with an example of a thing that is a unity of opposites in the sense that one aspect of it, its *axis*, is able to stand still while another aspect of it, its circumference or periphery, is moving. We have already seen that these aspects of things should not necessarily be construed as being material parts; however, it is also clear that they should not be construed as being attributes of a substance. That is, it is not the case that such a thing (qua rotating thing) could lose or gain its axis or periphery (although these

aspects themselves, in certain circumstances, may change their position or shape, etc.). In fact, it is notable that use of, precisely, the concepts of *axis* and *circumference* is necessary for, and indeed part of, explaining the very concept of a *rotating body*.

In light of Plato's formulation of the PNC, it is clear that none of Heraclitus' examples, properly understood, could be seen to violate it. That is, where Heraclitus provides examples of unified things containing opposed aspects, the opposed aspects of these examples cohere in ways that are similar, in the relevant respects, to how the axis and periphery cohere as aspects in Plato's example of the spinning top. There are a number of fragments that present examples that are similar to that of the spinning top in various ways. For example, in fragment 125, the barley-drink that is a suspension, which is stirred and moves (changes) while remaining, and in order to remain, the same drink; the path of whatever is spoken of in fragment 59 (e.g., the carding wheel, or writing), is straight in respect of one aspect and crooked in another; in fragment 60, the road up and down are one and the same, despite their uses involving movement in opposite directions (we will look at this example again later in this chapter, and in Chapter 2).

There is one fragment in particular that presents an example that is especially similar to Plato's example of the spinning top in terms of its geometry, discounting, that is, the (explicit) presence of movement. That is, the example of the circle in fragment 103. This fragment is often translated as saying that beginning and end are common in a circle's circumference, and this is taken to mean that a single point may be both a circle's beginning and its end. Whatever about the correctness, or otherwise, of this as an example of unity of opposites, there is another, more compelling translation and interpretation available due to the late Peter Manchester. He translated fragment 103 as follows:

For together: origin and boundary at the periphery of a circle. (Manchester, 2005, p. 149: D. 103)

Here, *arche* and *peras*, instead of being translated as 'beginning' and 'end', are translated as 'origin' and 'boundary' respectively. That is, the axis of the circle's radius, i.e., its origin, comes together with its boundary, i.e., the limiting constraint of the extent of the radius, in the path of the periphery ('that which goes around') of the circle. There is an independent reason to consider this to be the correct reading of the

fragment, which was put forward by Serge N. Mouraviev, and seems to have gone unnoticed by Manchester. Mouraviev points out that the Greek word περιφερείας is bookended by the syllables ‘περ-’ and ‘-ας’, that is, περιφερείας literally contains πέρας orthographically (Mouraviev, 1991, p. xxv), as the ‘boundary’ of the word so to speak.

Dilcher explains that the accusations of, on the one hand, a ‘looseness’ of description and, on the other, flat self-contradiction on Heraclitus’ part, are the result of analysing the fragments in terms of “the concept of opposition”, and consequently, trying to make his thought fit into the hereditary interpretative formula of ‘unity-in-opposites’ (Dilcher, 1995, p. 106). Furthermore, he posits that:

[...] it seems ill advised to impose a concept of “unity-in-opposites” upon Heraclitus. It seems to be the consequence of a misguided hermeneutic principle, namely that Heraclitus meant to prompt us to extract one comprehensive formula to account for all specific examples [...] he quite deliberately avoids such systematisation. (Dilcher, 1995, p. 106)

This corresponds to the second of Dilcher’s problems for the formula ‘unity-in-opposites’, which he raises in his 2013 paper; i.e., that, due to the diversity of examples and the opposites mentioned in them, we cannot claim that there is a single notion of ‘unity of opposites’ that would encompass all of them. I will respond to this problem in Chapter 3, in light of Mourelatos’ interpretation, which will be discussed in Chapter 2.

§6 The problem of ‘unity’ and ‘opposition’

According to Dilcher, the formula ‘unity-in-opposites’, rather than being a comprehensive guide, corresponds to a problem regarding ‘unity’ and ‘opposition’. Dilcher puts this thus: “While these two terms may rightly circumscribe the problem, they do not seem to provide its best conceptual solution” (Dilcher, 1995, p. 106). Dilcher’s point is that it is not clear that Heraclitus’ would have wished us to analyse his work in terms of ‘opposites’; this seems to have led the study of Heraclitus’ philosophy into unresolvable interpretative problems. Dilcher posits that:

While many examples of what Heraclitus presents by antithesis (to use a purely descriptive term) can be formally classed as opposites, it seems to be the theoretical analysis into

“opposites” which is misleading. Speaking of opposites, we invariably have the image of two warring opponents in mind. We cannot avoid starting with two absolutely separated things set against each other (op-posita, ἐναντία) which are then unified. It is this subsequent step which is so problematic: how can we plausibly arrive from diversity to unity? (Dilcher, 1995, p. 108)

Dilcher has here hit on what is indeed the crux of the issue. As we will see in the next chapter, this characterisation of the problem is quite similar to Mourelatos’ characterisation of the kind of *naïve metaphysics* that Heraclitus was objecting to. The image of two warring opponents is one that Mourelatos’ sees as a mythological yet realistic “territorial vendetta” between opposites, which he associates with the view of Anaximander in particular (Mourelatos, 2008, p. 315). The notion of opposites as “absolutely separated things set against each other” is indeed the one that Heraclitus is attempting to overcome, or so I shall argue in the next chapters. Mourelatos presents this notion as being embodied by the postulates of the naïve metaphysics that he discusses. However, as we will see in the next chapter, he goes into much more detail, and substance, than Dilcher regarding what exactly the ontology of these *mere things*, and their being “set against each other”, is like. As such, this is not, as Dilcher seems to present it, merely an interpretative issue for us; it is, rather, according to Mourelatos, the very kind of naïve thinking about opposites that Heraclitus was revolting against.

The conception of the interpretative problem given by Dilcher above, that of *subsequently* arriving at a ‘unity’ from ‘opposition’, points to what I take to be one of the main problems with the traditional interpretations of the unity of opposites. This is because it takes the unity of opposites to be something external to the relationship of the opposites themselves; that is, something that is in some way in need of being accomplished by us subsequent to our grasping of an opposition. Rather, my own view on the unity of opposites is that, leaving aside for the moment an exact characterisation of this unity, it is a principle that is internal to the nature of opposition itself. That is, when Heraclitus provokes us to recognise the truth of the doctrine of the Unity of Opposites, he is provoking us to recognise none other than the nature of opposition or duality itself, not some principle that is external to it. Indeed, as we will see in Chapter 4, in a certain manner a similar confusion was at play in modern semantics when ‘antonyms’ were taken as being maximally opposed

to each other, i.e., as the opposite extreme from the concept of a 'synonym', identity of meaning (Lyons, 1977, p. 286).

I wonder, however, whether, by the radical choice of ridding our interpretative approach to Heraclitus of the general notion of 'opposites' and 'opposition', Dilcher may not be wedded to the very conception of the relation between opposition and unity that he has done so much good work to guard against. What, we must ask, is wrong with our recognizing in Heraclitus' several pairs (of opposites) the very notion of opposition; and with supposing that Heraclitus may have wanted us to recognize precisely this? Indeed, Dilcher may be right that Heraclitus' seemingly conscious avoidance of a general term for 'opposites' and 'opposition' is significant, and that what it signifies is his, Heraclitus', guarding against a misguided conception of opposition, that is, as a something to be added to any particular pair (of opposites). However, it in no way follows that we, in full consciousness of this pitfall, may not suppose that Heraclitus may have wanted us to recognize a general notion of opposition; provided, of course, that we conceive of it in the proper way and with the proper philosophical tools, some of which, at least, we may think of as having been the tools that Heraclitus intended.

As far as Dilcher's own treatment of these issues goes, he is in some ways not too far from the mark, at least in terms of his assessment of the main individual fragments. Dilcher identifies fragment 51 as being the one "that comes closest to speaking of opposition" (Dilcher, 1995 p. 109; cf. 2013, pp. 263–4).²⁵ In this fragment we do not find two 'opposites' opposed to each other, rather, we find one thing engaged in, and constituted by, a dual process that, although being a single phenomenon, must be expressed by two words (Dilcher, 1995 p. 109). Fragment 51 says:

They do not comprehend how a thing agrees at variance with itself; it is an attunement turning back on itself, like that of the bow and the lyre. (Kahn, 1979, p. 65: LXXVIII [D. 51])

Dilcher points out that in this case we cannot analyse this back-stretched harmony into either 'unity' or 'opposites'. The 'agreement' and 'variance', i.e., the convergent and divergent aspects are "indistinguishable" and must be understood as "verging

²⁵ This is the same fragment pointed to by Hussey as being one in which Heraclitus speaks in general terms about 'unity-in-opposites'.

imperceptibly into each other” (Dilcher, 1995, p. 109). Dilcher here adds the important point that if we want to describe the mutual relation between divergence and convergence “we can do it only on the very same terms: difference and convergence are contrary to each other, and yet they agree with each other. The terms are self-referential” (Dilcher, 1995, p. 109). It is this kind of self-referentiality that Hussey took to be an aspect of the generalising movement that he outlines. The point here is that Heraclitus is avoiding an analysis in terms of ‘unity’ and ‘opposition’, because this would bring about a schism in the conceptualisation of an object such as a bow or a lyre. Conceiving of the back-stretched harmony as two incommensurable processes would set off a chain of analysis that will always keep them apart; we would not arrive at an understanding of the unity. However, simply conceiving of the bow or the lyre as a static unity of processes would not adequately express how the function of these instruments is brought about through a tension of processes. Another pertinent fragment that Dilcher discusses in this regard is fragment 60:

The way up and down is one and the same. (Kahn, 1979, p. 75: CIII [D.60])

Dilcher tells us that this is the clearest statement of identity in Heraclitus, but that there is an ambiguity as to what is being identified. The ‘way’ or ‘road’ can be taken in two senses: as two ways, the way to and the way back; or as the one underlying road that can be walked in two directions. The first reading is a contradiction; the way walked from Dublin to Galway is not the same as the way walked from Galway to Dublin. The second reading is seemingly trivial; if I can walk on a road from Dublin to Galway, of course I can walk from Galway to Dublin on the same road. Dilcher says that this ambiguity constitutes a paradox, which corresponds to an analysis in terms of ‘unity’ and ‘opposition’. If we conceive of the road as being a unity we see it, unsurprisingly, as one road that can be travelled in two ways, but if we see it as two opposed ways we destroy the possibility of this unity through it being a contradiction. Thus, the philosophical meaning of the fragment can only be attained by upholding the tension of the paradox (Dilcher, 1995, p. 111). As Dilcher explains: “It is precisely by being able of being walked both ways that it is one and the same way. The one physical path on the ground is only there by virtue of the two opposed movements which it allows” (Dilcher, 1995, p. 111). Dilcher explains that here “the

unifying term is oscillating”, it operates on two levels, those of ‘unity’ and ‘opposition’, and these two levels “converge into each other so that neither gains prevalence” (Dilcher, 1995, p. 111). Putting this fragment in terms of the previous one, fragment 51, Dilcher says: “The way differs from itself in that it leads at once in one direction and in the other; and it agrees with itself in that it functions precisely by this combination” (Dilcher, 1995, p. 112).

Here I am in disagreement with Dilcher about what the unity of the two paths or directions consists in. Dilcher asserts that it is the ‘underlying’ physical road, i.e., the tarmacadam or other material, which is the cause of the unity. This was a point that I attempted to clarify with Dilcher in person. I had originally not read his statements in this way, and had taken them to be referring more generally to a linear path in space of any kind, but he insisted that it had to be the physical road in its material sense that Heraclitus was referring to. However, I find this quite an odd view, because it says that there is only a unity between ‘up’ and ‘down’ (or ‘to’ and ‘fro’) because there are instances of roads in the world. Furthermore, it seems quite unusual to claim that Heraclitus is to be taken to have had a special interest in roads rather than fences, the flight path of an arrow, or the line between one terminus and another, etc. It seems to be part of Dilcher’s strategy, aimed at denying that there is a single thesis of unity of opposites, to deny that certain fragments have any general import beyond a particular application to the very situation mentioned.

Contra Dilcher, I regard this fragment as pointing to a peculiar general facet of reality (if indeed one can truly bring oneself to see it as peculiar), which is that every spatial dimension is necessarily bidirectional. There is no ‘mono-direction’ without an opposite direction, constituting a mono-polar spatial dimension; there are also no dimensions with three (or more) polarities, in fact, it is difficult if not impossible to imagine what this might be like. That is, it is no *accident* that spaces feature two opposed poles, e.g., both an up and a down. I take this to point to the fact that there is an irreducible *duality* about space and the conceptualisation of possible spaces. For example, we hear of talk in theoretical physics of possible spaces constituted by higher (or lower) numbers of dimensions than the three that we are used to, and even talk of non-integral amounts of dimensions, i.e., fractal dimensions in topology. However, we do not hear any mention of ‘(di)mensions’ with one or three poles, or a non-integral amount of poles (an even more bizarre notion). We will look at this

fragment again in the next chapter when we discuss the interpretations of Mourelatos, Moravcsik, and Aristotle's use of the example of the road in his *Physics*.

Dilcher identifies fragment 10 as operating on a theoretical level. Fragment 10 says:

Graspings: wholes and not wholes, convergent divergent, consonant dissonant, from all things one and from one thing all. (Kahn, 1979, p. 85: CXXIV [D. 10])

The modern scholarship of this fragment accepts the first term, which Kahn translates as 'Graspings' (*syllapsies*), as the subject of the sentence and not as a predicate. There are various other translations of *syllapsies* given by interpreters; such as, 'things taken together' (Kirk), 'Things grasped together' (Robinson), 'Connexions' (Marcovich), 'Comprehendings' (Hussey), while Dilcher reads "takings together, connections, conjunctions" (Dilcher, 1995, p. 112). However, Kahn begins with the more literal sense of the word given by the translation 'Graspings', implying the seizure, or the capturing, of someone or something (Kahn, 1979, pp. 281–2). Kahn also notes two other senses that he thinks are essential for deciphering the fragment: that of "a 'taking-together', a physical conjunction or concatenation of sounds or the like, as in the cognate *syllable*, 'syllable'."; and "the cognitive act of collecting together, comprehending, or summing up", such as in the case of "the corresponding verb *syllambanein* 'to comprehend'." (Kahn, 1979, p. 282). Furthermore, he thinks that there is no need to choose between these two senses; between the thing grasped and the act of grasping, between the object and the action. He explains this idea by saying that "*Syllapsies* will denote the pairwise structuring of reality, and also the act of intelligence by which this structure is gathered together" (Kahn, 1979, p. 282). On this account, Heraclitus' term *syllapsies* seems to have much in common with our earlier characterisation of 'Duality' in the broad sense, as the *dual* structuring of reality and our experience of, and thought about, this structure. As Dilcher says: "'Connections" therefore is what the following pairs of "opposites" are explicitly called, and at the same time what is implicitly achieved by the dense structure of the fragment" (Dilcher, 1995, p. 112).

Kahn punctuates the fragment in such a way that divides it into four pairs, each predicated of the first term 'Graspings'. Dilcher, however, takes the fragment to be divided into three; taking the first term and the first pair 'wholes and not wholes' to be one clause, then the next two pairs of terms to be a second clause, followed by

the final clause, 'from all things one and from one thing all', which is an expanded version of the formula *hen panta* from fragment 50 (Dilcher, 1995, p. 112) and is also reminiscent of the parallel structures of 'requital' that can be found in fragment 90. Dilcher rejects Kahn's interpretation of this fragment in terms of a *predication* between the terms, instead, the terms of the fragment are simply 'connected' and thereby form a self-referential structure.

Dilcher explains the first clause by saying that "Each pair is whole in first providing a sufficient explanation of contrariness, and not whole as it is again to be explained by itself and the other pairs" (Dilcher, 1995, p. 113). The next clause, which is reminiscent of fragment 51, describes the dialectical movement of the *hen panta*, in the sense that "in taking together convergence and divergence, we move from πάντα to ἓν – and backwards again" (Dilcher, 1995, p. 113). This structure is self-referential because it can again be described in the same terms; taking together convergence and divergence, in the movement from *panta* to *hen*, may be described as convergence, while the reverse, taking them separately and moving from *hen* to *panta*, may be described as divergence (Dilcher, 1995, p. 113).

Dilcher summarises his understanding of what this fragment says about *syllapsies* by reading the whole sentence as: "All things converge and sing in tune to make one whole and the whole one diverges and sings out of tune to make all things" (Dilcher, 1995, p. 113). Dilcher here tells us that *syllapsies* functions as "the highest term for the activity of the logos [...] It leaves room for both the essential coherence and essential difference of what is taken together" (Dilcher, 1995, pp. 113–4). He reiterates that the unity involved in this activity is not simply a collapse into a "self-identical point" but rather the holistic "movement of a closed ring" (Dilcher, 1995, p. 114).

The above description of Dilcher's views on some of the prominent fragments gives a sense of the 'dialectical' interpretation of Heraclitus that he wishes to pursue. The main objections that I have to this procedure, and that I have begun to spell out in this chapter (I will continue in this criticism in Chapters 2 and, especially, 3), are as follows. First, Dilcher goes unnecessarily far when he concludes, from the risk of a misguided conception of the relation between opposites and their unity, that we must not avail ourselves of a general notion of opposition when interpretatively approaching Heraclitus' work. Secondly, as the result of the, in my mind, unnecessary choice of not availing ourselves of a general notion of opposition when interpreting

Heraclitus, Dilcher forgoes of the very possibility of looking closer at how, in general, Heraclitus conceives of the relation between opposites, their unity. Thirdly, and in large part as a result of these two shortcomings, Dilcher's examination of Heraclitus' several pairs (of opposites) appears to take place in an analytic (no pun intended) and ontological vacuum. Finally, it seems to me that Dilcher does not properly place Heraclitus within his historical context (a point to which I shall return).

Dilcher, it appears, has helpfully rid us of certain hereditary confusions regarding the Unity of Opposites, such as, the interpretative privileging of either the Analytic or the Synthetic aspects, and the Transcendent interpretation of the unity as being 'underlying' or 'on a higher level'. However, in the process he seems to have gotten rid of any possibility of a stability of interpretation. In fact, he feels that he has replaced the problem of characterising the Unity of Opposites entirely, by replacing it with the dialectical movements described above. This, I feel, is not a move that has won for us a greater understanding of Heraclitus' philosophy, rather, it has opened up an interpretative void that is being filled by anyone and everyone who gets hold of it; a case in point being Schindler's interpretation described above, but there are others that I have decided not to discuss such as Matthew Meyer's book from 2009, which also leans heavily on Dilcher's interpretation. In the next chapter we will see how Mourelatos and Moravcsik provide us with a more philosophically compelling and historically motivated account of the place of Heraclitus and his doctrine of the Unity of Opposites in the history of philosophy.

CHAPTER 2: Heraclitus' Revolution against Naïve Metaphysics

Abstract of Chapter 2

In the last chapter we identified various problems with ascribing a Unity of Opposites thesis to Heraclitus, and we developed some critical tools for analysing this thesis. In this chapter, I wish to start preparing for a solution to these problems and for a full use of these tools; these tasks will, then, be properly undertaken in the next chapter (Chapter 3).

I shall discuss the interpretations of Alexander Mourelatos and Julius Moravcsik, and describe, explicate, and extrapolate Heraclitus' revolution against naïve metaphysics. I shall argue that understanding Heraclitus in terms of his reaction to the naïve metaphysics that, in his view, preceded him provides unique solutions to a number of difficult interpretative issues. I shall argue that Heraclitus had a proto-notion of essence and was not an extreme flux theorist as is often supposed. In doing so, I shall look closely at the interpretations of Mourelatos and Moravcsik, Heraclitus' example of 'The River', and Aristotle's assessment of Heraclitus' road claim.

Introduction

In the last chapter we looked at a number of the prominent interpretations of Heraclitus' doctrine of the Unity of Opposites, and Dilcher's rejection of some of their assumptions. However, as I mentioned, it is still important to ask what we have learnt from Dilcher about the *philosophical content* of the doctrine of the unity of opposites. The answer, which I suggested, is: not much more than we knew already by listening to the more traditional interpretations.

Moreover, Dilcher does not think that there is any such doctrine, or at least that, whatever it is, we should not speak of it as being 'The doctrine of the Unity of Opposites', given that he sees this as being merely a restatement of the problem of how unity and opposition coincide or, less tendentiously, how they are related. He does pose three specific problems with the notion of such a doctrine (Dilcher, 2013),

which we set out in the previous chapter and to which I shall provide responses in the next chapter. However, for the moment, it should be noted that Dilcher leaves us with a rather unclear picture of what Heraclitus takes the relationship between unity and opposition to be. What is also unclear or, should I say, under-motivated on Dilcher's view is what the *philosophical relevance* of Heraclitus' position is. That is, Dilcher does not provide much development in the critical and scholarly account of Heraclitus' theoretical motivations, or try to set this view against prior theorising about opposition.

So, I find Dilcher's interpretation to be lacking on two counts: (i) it is lacking in terms of the *philosophical content* that is provided regarding the 'unity of opposites'; (ii) it is lacking in terms of providing an adequately contextualised account of the *philosophical relevance* of Heraclitus' doctrine and his motivations for proposing it. Despite what I take to be the undeniable success of Dilcher, in showing the folly of the two perennial strands of interpretation of the doctrine (broadly, the analytic and the synthetic), these issues remain unresolved in his interpretation. However, I feel that this situation is not without hope. In fact, there are two scholars in particular whose interpretations have been largely overlooked given that they appear to arise from a methodology somewhat distinct from the traditional ones that we have been discussing.²⁶ These scholars are Alexander Mourelatos and Julius Moravcsik. The prime focus of each of their methodologies seems to be precisely to provide the necessary context in which to place the views of Heraclitus. The natural result of this procedure effectivity produces accounts of the *philosophical content and relevance* of Heraclitus' doctrine, through providing the motivating factors that were present in prior and contemporary theories at the time Heraclitus was writing. The views of these two scholars will be discussed in this chapter.

²⁶ However, there are some notable occurrences to mention, for example, in *The Routledge Companion to Metaphysics* from 2009, David Sedley bases part of his section about Heraclitus on Mourelatos' 1973 article. Another is Joel Wilcox's *The Origins of Epistemology in Early Greek Thought: A Study of Psyche and Logos in Heraclitus*, in which he says that: "Mourelatos [...] provides a valuable model of cognitive evolution in Greek thought, from a world of perceived independent "character powers" to a "logos-textured" world of "conceptual connections" in which "thinghood" is subordinated to relatedness. Mourelatos' view that Heraclitus was the first to recognize the "deep structure" of things as opposed to their "surface structure" is largely accepted in the present study. However, this study amplifies that of Mourelatos in the following ways: (1) It posits an epistemological irritant—viz., Xenophanes—who more or less compelled Heraclitus to justify his claim to knowledge of "deep structure"; and (2) it attempts to explain how Heraclitus tried to answer Xenophanes, and why, in doing so, he had difficulty in achieving consistency" (Wilcox, 1994, p. 138: n. 20). The use of the analogy to "deep structure" and "surface structure" here is, as we shall see, quite apt, but Wilcox does not say anything more about it.

§1.1 Mourelatos and the Naïve Metaphysics of Things (NMT)

In his 1973 article, ‘Heraclitus, Parmenides, and the Naïve Metaphysics of Things’,²⁷ Alexander Mourelatos proposed a novel interpretation of Heraclitus’ theory of opposites as being what he called an “anti-realist” reaction to the contemporary naïve metaphysics of things.²⁸ Mourelatos’ use of the term ‘anti-realist’ will be described later in this section. This reaction is presented as the genesis of the metaphysical notion of qualities (and, consequently, of the substance / quality distinction), a replacement for the metaphysics of what Mourelatos called “character-powers”, which he dubs *the paratactic metaphysics of mere things*. These notions will be explicated further in what follows.

The novelty and value of this interpretation of Heraclitus lies in the fact that Mourelatos has provided us with a reconstruction of the philosophical context in which Heraclitus’ thought takes place. Heraclitus is reacting to commonly-held metaphysical beliefs that are embedded in the use of language employed by his predecessors. In order for us to make sense of this interpretation it will be necessary briefly to outline what Mourelatos calls “the naïve metaphysics of mere things”, which he abbreviates to ‘NMT’ (Mourelatos, 2008, pp. 300–1). He also later refers to this same metaphysics as a “paratactic metaphysics of mere things” (Mourelatos, 2008, p. 319).²⁹ In his exposition of the NMT, Mourelatos identifies “three postulates or requirements: (a) thinghood; (b) equality of status and independence; (c) recognition of affinities and polarities” (Mourelatos, 2008, p. 303). I shall now describe each of these three postulates.

The first postulate that Mourelatos identifies is ‘thinghood’. He warns us that “The mental effort of feigned naïveté is required of us if we should try to picture a world merely of things” (Mourelatos, 2008, p. 300). This is because we are accustomed to approaching the world in terms of later metaphysical notions, such as

²⁷ Republished in 2008 as an appendix to a new edition of his work, *The Route of Parmenides*.

²⁸ It should be noted here that Dilcher does not include this article in his bibliography, and does not appear to respond to the position that Mourelatos held; it may be the case that he was unaware of it.

²⁹ In this postulation of an early pre-Socratic naïve metaphysics Mourelatos is drawing on a similar theory proposed by Heidel (1906) (cf. Mourelatos, 2008, p. 307), and also points out that Wilfred Sellars later proposed a similar theory in 1981 (cf. Mourelatos, 2008, p. 302: n. 5). There is, however, another author, namely Julius Moravcsik, who devised an interpretative scheme that is quite similar in many respects to that of Mourelatos, and which also has Heraclitus’ philosophy as its focus. Moravcsik’s work was not taken account of by Mourelatos in the reprint of his paper, but we shall take account of it later in this chapter.

the substance/quality distinction, and through the use of “intelligent discourse—predicates and propositions” (Mourelatos, 2008, p. 300). Instead, the paradigm of knowledge here is one of “encounter and acquaintance with each of the things that present themselves in physical (or perceptual) space” (Mourelatos, 2008, p. 300). Thus, ‘thinghood’ here means to be ‘presented in physical or perceptual space’.

It is difficult to discuss postulate (a) of ‘thinghood’, within this framework, separately to postulate (b) of ‘equality of status and independence’. This is because part of what it means to be a *mere thing* is just to lack any ontological dependency relations to any other thing (except, that is, mereological relations, as we will see below), and to be on the same ontological level as every other mere thing, as a physical and spatial being. As Mourelatos says:

Each thing would be (conceptually, as we would say) independent of every other thing. There would be no abstract or dependent entities—no qualities, or attributes, or kinds, or modes of reality. All things would be equally real since they all are univocally *in* physical space. (Mourelatos, 2008, p. 300)

However, as Mourelatos points out, this is not sufficient, even for a naïve metaphysics. Within this framework there still must be a way of dealing with recognisably complex entities. As such, Mourelatos coins the term “character-powers” to refer to the thing-like components of complex entities, giving δύναμις (*dunamis*) as the equivalent Greek for this expression (Mourelatos, 2008, p. 301).³⁰ These character-powers are not on a different ontological level to any other thing; they are also merely “concrete entities in physical space” (Mourelatos, 2008, p. 302). In an edited book chapter from 2006, in which Mourelatos examines the pre-history of the concept of the Universal, he refers back to the notion of character-powers from his 1973 article; he says that they are representatives of a hybrid category of ‘thing-stuff-power-quality’ of which he gives the following historical examples:

The “opposites” in Anaximander and in Alcmaeon, the intermingling earth and water of Xenophanes, the opposite *morphai* in Parmenides’ “Doxa,” the four elements of Empedocles,

³⁰ One of his former students, Daniel W. Graham, reports that Mourelatos then, i.e., in 2006, preferred the term “characters/powers” (Graham, 2006, p. 66: n. 52). Although Graham seems to have been influenced somewhat by Mourelatos’ theory, and adopts certain aspects of it (e.g., the ‘*logos*-textured’ world, etc.), he rejects the interpretation of the early Ionian view of entities as being in terms of a theory of powers. Instead, he interprets the Ionian view in terms of what he calls the ‘Generating Substance Theory’ (Graham, 2006).

the infinite *chrēmata* of Anaxagoras' cosmology, and (in parallel to these more properly philosophical contexts) the *dunamies*, "powers," of the medical treatises – all these entities represent a hybrid category of thing-stuff-power-quality (Mourelatos, 1973, pp. 17–30). (Mourelatos, 2006, p. 62)

I will, later in this section, outline Mourelatos' treatment of the examples of this hybrid category that he provides in his earlier work, namely, those found in Hesiod and Anaximander, and Heraclitus' reaction to them.

Postulate (c) of the NMT, 'recognition of affinities and polarities', is what Mourelatos thinks eventually leads to the demise of the NMT. This is due to the fact that, when thought through in its relation to the other postulates, it leads to the systemic contradictions that are internal to this naïve metaphysics, being revealed. I will look at this development more closely when we come to discuss Heraclitus' contribution to this topic. Within the framework of a consistent NMT, however, the affinity between character-powers takes the form of "nothing more than a tendency of physical propinquity in space", while that of polarity takes the form of "a tendency of apartness" (Mourelatos, 2008, p. 303). Thus, within the framework of this metaphysics of mere things, affinities and polarities between things are conceived of as being tendencies of the spatial arrangement of things.

Along with these three ontological postulates of the NMT, Mourelatos includes what he calls "a semantic-epistemological corollary to the requirement of thinghood. *Logos*, the characteristically propositional texture of intelligent discourse, is not in any way constitutive of reality, of our object of knowledge" (Mourelatos, 2008, p. 303). Mourelatos explains that, given the nature of the NMT, the function of the verb 'to be' is "Neither fully a predicative copula nor a marker of identity, this "is" might be called the "is" of introduction and recognition, since it has its paradigm—as does the scheme as a whole—in acquaintance" (Mourelatos, 2008, p. 303). Thus, for the NMT, language is "dispensable" and "merely a convenience". This is because the function that it performs is merely the naming of things, or later the evoking of them, which Mourelatos describes as being equivalent to what can be done by the body without the use of language through direct contact with a thing, or gesturing and reaching for it, respectively (Mourelatos, 2008, p. 303). Mourelatos explains how this dispensability of language as a mere convenience engenders a 'thorough-going realism':

The transparency and dispensability of language that this metaphysics requires and guarantees give it the intuitive appeal of a thorough-going realism. It affords a welcome license that we may disregard details and nuances of language, confident in the expectation that our knowledge of the world would ultimately have the form of "This is *F*," where the statement is understood as indifferently analogous to "This is Odysseus," "This is Ithaca," "This is water," or "this is gold." (Mourelatos, 2008, p. 316)

It is important to understand the peculiar nature of this realism in order to understand what Mourelatos later means by Heraclitus' 'anti-realism' in this context. Whereas, as we shall see, Mourelatos' use of these terms, 'realism' and 'anti-realism', is indebted to some of their philosophical use at the time of his writing, it would, I think, be wrong to suppose that this use is anachronistic; for, as we shall see, Mourelatos makes careful and extended effort to situate the distinction between realist and anti-realist views, understood in a particular way, in the philosophical context of Heraclitus' time, or at least the elements of it that Heraclitus was reacting to, which Mourelatos is reconstructing as the NMT.

Mourelatos locates what he finds to be historical examples of the NMT in the thought of Hesiod and Anaximander. These examples display a mythological aspect of the kind of 'realism' in question. The example from Hesiod that he cites is *Theogony* 748–54, where Night and Day are depicted as separate persons who live in the same house. The house never contains both of them, and while one is in the house the other is outside of it, journeying across the earth and *vice versa*. Mourelatos reads this as being "a model of Hesiod's scheme of characters-powers", which satisfies all three of the requirements of the NMT described above. In Hesiod's depiction, Night and Day are both 'things', that is, persons, thereby satisfying the first requirement, that of thinghood. They are independent of each other and are of equal status, given that they have equal access to the house and the earth, thus satisfying the second requirement. The depiction recognises the polarity of Night and Day, which is explained by their tendency to be apart spatially, thus satisfying the third requirement (Mourelatos, 2008, pp. 314–5).

Mourelatos locates the character-powers of Anaximander's thought in 'the opposites', which have "equal claims of tenure" in the world. This scheme similarly satisfies the requirements of the NMT. However, he notes a subtle difference to Hesiod's model in that, instead of punctually succeeding one another, "the opposites of Anaximander are utterly hostile to one another, they drive one another out"

(Mourelatos, 2008, p. 315). Despite this difference, what Mourelatos finds to be most important is “the spatial context of advance, retreat, and tenure in the conception of the opposites”, which is portrayed through a mythological yet realistic “territorial vendetta” between opposites (Mourelatos, 2008, p. 315). This metaphor of ‘territorial vendetta’ for opposition, is another example of the kind of realism through direct acquaintance, mentioned above, which the NMT engenders.³¹

I should also briefly explain Mourelatos’ use of the term ‘parataxis’ or ‘paratactic’. This is an artistic term that he is borrowing, in particular from the field of analysis of literary composition. In this sense, parataxis is a technique whereby elements of a work, in particular its words, clauses, or phrases, are composed without coordinated or subordinated syntax and instead are merely juxtaposed; the Greek etymology of the word ‘para-taxis’, is from ‘paratassein’ meaning ‘to arrange side-by-side’. Thus, Mourelatos employs this as a philosophical term to refer to the equal and independent nature of the mere things involved in the NMT, since he finds that “The genius of the world of characters-powers” and, consequently, of the NMT, is “akin to the genius of parataxis, the dominant principle of order in Homer, in Archaic art, and in Archaic composition. Each thing will be complete by itself, and the plurality of things will form a whole (harmonious nevertheless) in which all relations are external and explicit” (Mourelatos, 2008, p. 316). This final point about external and explicit relations will become important when we discuss Heraclitus’ reaction to this paratactic metaphysics in the next sub-section.

§1.2 Heraclitus’ ‘anti-realism’ about ‘opposites’

Mourelatos uses the framework of the NMT, described above, that is, the paratactic and ‘realist’ proto-metaphysics, as a foil for Heraclitus, and as an interpretative tool for his thought. As such, Mourelatos claims that Heraclitus was the first thinker to “perceive the incompatibility between the requirement of thinghood and the recognition of polarity”, these being the first and third postulates of the NMT, respectively; Heraclitus’ solution is “to preserve the latter but to abolish the former” (Mourelatos, 2008, p. 317). In order to show how and in what way Heraclitus

³¹ As was mentioned in Chapter 1, Dilcher sees this way of conceiving ‘opposites’, as warring opponents, as constituting a problem for the conceptualisation of the ‘unity of opposites’ (cf. Dilcher, 1995, p. 108).

accomplished this, Mourelatos analyses a number of fragments, in particular fragments 60, 57, 126, and 90. In each case he outlines how Heraclitus is moving away from the NMT.

As an initial example Mourelatos points out that in the NMT, the terms ‘up’ and ‘down’ refer to ‘absolute regions’ that have separate identities.³² However, citing fragment 60, he says that “For Heraclitus, “up” and “down” are no more than opposed directions in a pathway” (Mourelatos, 2008, p. 317).³³ Unfortunately, Mourelatos does not go into much more detail about this fragment. However, what should be taken from this brief characterisation is that Heraclitus is rejecting the conception of the opposition between ‘up’ and ‘down’ that is based on the second postulate of the NMT. That is, that the up and the down are independent of, and externally related to, each other.

Next, Mourelatos returns to the historical example of the NMT in Hesiod’s depiction of Night and Day. Here Mourelatos interprets Heraclitus’ criticism of Hesiod in fragment 57 to mean that, instead of Night and Day being two distinct individuals, and their opposition being conceived spatially as a tendency of alternating occupation of the same house, “Night and day are not two persons or two *things*; they are complementary moments, aspects, or phases of a single phenomenon” (Mourelatos, 2008, p. 318). It is important to note here that, in comparison with Hesiod, the novel metaphysical point that was made by Heraclitus was that it is no mere *contingency* or ‘tendency’ that Night and Day occupy separate regions; rather, this is a *necessary* consequence of their relationship (i.e., they are *one*, in the sense of being ‘internally or conceptually related’), which in principle could never be otherwise. As Mourelatos sums up later in his article, in contrast to naïve theorists both before and after him, what Heraclitus had realised was that “it is no accident that the world should instance *both* hot and cold, bright and dark, dry and moist, and likewise for other opposites; and that it is no accident that opposites should exclude one another” (Mourelatos, 2008, p. 331).

Mourelatos notes that “It is very plausible that Heraclitus would have extended the same line of criticism to Anaximander’s opposites” (Mourelatos, 2008, p. 318). While there is no fragment that directly mentions Anaximander, Mourelatos

³² In conversation, Mourelatos used the example: “the Down meaning Hades and the Up meaning the heaven” (Telephone conversation, 2014).

³³ Robinson translates fragment 60 as follows: “A road up <and> down <is> one and the same <road>.” (Robinson, 1987, p. 41)

is content to abide by the reading of fragment 80, which is held by many commentators (including Kirk as was mentioned in Chapter 1), that Heraclitus was admonishing Anaximander for his pessimistic notion that strife (between opposites) is a kind of injustice.³⁴ Instead, for Heraclitus, justice is strife and all things come to be in accordance with it. However, Mourelatos' interpretative framework, which takes into account the NMT, allows him to suggest another (ontological) aspect to this admonishment: "the opposites are essentially incompatible [...]; they are *one*, they are internally or conceptually related by being opposed determinations within a single field" (Mourelatos, 2008, p. 318).³⁵ The thought here is that because Anaximander was still in the grip of something like the NMT, he viewed the opposites as being independent warring opponents, separate individual *things*, which relate to each other externally and spatially. The reason that Heraclitus gives here for the strife of the opposites is, on the contrary, that it is essential to them to be incompatible given that they are internally related in this way and not separate *mere things* related externally, thereby undercutting Anaximander's pessimistic attitude to this situation, which is shown simply to be of no probative relevance ontologically speaking.

To reiterate this point: Whilst other commentators often propose similar interpretations of this fragment and its relationship to Anaximander's view of strife between opposites,³⁶ Mourelatos makes it clear that the difference is not simply one between a pessimistic or an optimistic attitude towards the external polar relations between mere things, rather, Heraclitus is denying that these relations are external and contingent; as such, the choices of pessimism and optimism are not applicable because there is no situation in which opposites could cease to be in strife, and

³⁴ For example, see (Kirk, 1954, pp. 176, 401); (McKirahan, 2010, p. 136); and Kahn (1979, pp. 206–7), who links this fragment to Hesiod and Homer in addition to Anaximander. Kahn also quotes Vlastos; see footnote 36 below.

³⁵ When I asked Mourelatos about this notion of being 'internally or conceptually related' he responded that, while it is possible that this language was an echo from his time in graduate school involving talk of Wittgenstein's attack on 'internal relations', he said that "I think I wasn't really intending anything more technical other than to say that the relationship is not one that is just factual but there is some kind of a conceptual affinity; it's more like the relation between...well...the hot and cold are in that sense conceptually related, and blue and red are conceptually related whereas...you know...something can be blue and can be wise but these don't go together, they just happen to be together." (Telephone conversation, 2014).

³⁶ Perhaps we may include here a similar thought that was presented by Vlastos: "Two of the fundamental ideas in Anaximander—that there is strife among the elements, and that a just order is *nevertheless* preserved—are re-asserted in a form which universalizes both of them and thereby resolves the opposition between them: what is a "nevertheless" in Anaximander, becomes a "because" in Heraclitus" (Vlastos, 1955, p. 358). Kahn (1979, p. 206) quotes from a partial reprint of this article in which 'because' has been emended to 'therefore'.

furthermore, they are not even *things* in the sense in which Anaximander thought them to be. These two points correspond to a strengthening of the third postulate and an abandonment of the first postulate of the NMT, respectively. Thus, as Mourelatos sums up later:

“Heraclitus took the revolutionary step of abandoning the postulate of thinghood. The world thus came to be seen as a play for non-substantial patterns, reflecting the polarities and affinities that are inherent in intelligent discourse.” (Mourelatos, 2008, p. 331)

Mourelatos points out that the use of terms like ‘determinations’, ‘phases’, ‘aspects’, and ‘moments’, while not being Heraclitus’ terminology, “are indispensable in an explication of his doctrine of the unity of opposites” (Mourelatos, 2008, p. 318). They have what he terms an “anti-realist thrust” in the sense that, instead of taking account of things by direct acquaintance, as was the paradigm of the NMT, they take account “of ways in which we conceptualize and describe things.” Although Heraclitus did not have the vocabulary to express this, the “deeper harmony” that he wished to express “was the harmony of conceptual connections.” Heraclitus accomplishes this by employing “emblems and symbols”, rather than spatial models of advance and retreat that are found in early depictions (Mourelatos, 2008, p. 319). Mourelatos explains that:

“What he wants to know is not an aggregate or array of things in space but a γνώμη, a thought, and τὸ σοφόν, “the wise.” His scorn for πολυμαθίη [‘polymathy’] is probably connected with his critical stance toward the paratactic metaphysics of mere things.” (Mourelatos, 2008, p. 319)

What is implied here can, I think, also be characterised as a distinction between intension and extension. That is, what Heraclitus derides is particularised extensional knowledge of concepts and instead seeks an intensional understanding in the form of ‘a thought’ and ‘the wise’.

The next fragment that Mourelatos addresses is fragment 126: “Cold things heat up; hot cools down; moist dries up; the parched is soaked” (Mourelatos, 2008, p. 320). Mourelatos quite rightly points out that “What this language most pointedly disparages is the conception: “the hot comes in and the cold goes out, etc.” ” (Mourelatos, 2008, p. 321), this is to say that Heraclitus’ depiction of change in this

fragment is not in terms of any spatial metaphor, i.e., it is not in terms of character-powers entering or exiting a mixture or compound. Rather, it recognises the unity of the opposites, their internal relation to each other, and speaks in terms of their change into one another. Mourelatos' interpretation here is of great value because it is able to account for the seemingly trivial nature of the statement; that is, it merely *appears* trivial to us because it is largely in accord with our own use of language, when in fact it is really a reaction to the paratactic NMT.

Mourelatos lists a number of terms that Heraclitus uses "to convey, as best he can, his novel and anti-realist conception of change" (Mourelatos, 2008, p. 321). However, he focuses on the simile of 'exchange' in fragment 90: "All things are an exchange for fire and fire for all things, as goods for gold and gold for goods." (Mourelatos, 2008, p. 321). Mourelatos explains that this conception is "far from that of qualitative alteration, as this was understood by Aristotle and the mature Plato. Yet, in inventing the simile of exchange, Heraclitus was obviously groping toward something more subtle and (as we would say) abstract" (Mourelatos, 2008, p. 321).

Although Dilcher was not responding to this particular view in his *Studies in Heraclitus*,³⁷ we may still read him as responding to this kind of interpretation of the fragment when he tells us that "At a period when just the first coins had been introduced, gold was not regarded as an abstractum like our "money", but as the most valuable of all things" (Dilcher, 1995, p. 102: n. 2). Indeed, some of the oldest coins have been found in Ephesus, and pre-date Heraclitus.³⁸ Dilcher was making the point here that it is possible for gold to be viewed as a thing among other things, a preeminent kind of good among other goods, and cannot be a fiat currency like we are familiar with today. Although, indeed, gold could not have operated as pure abstractum in Heraclitus' time, it does not follow from this that this money did not have any abstract or representative component.

The use of gold for exchanges of value requires that it has such a value to be exchanged. This value is determined by what it can be exchanged for. Gold itself is not pre-eminently valuable beyond its capacity to retain its value more than other goods, through its non-reactivity or imperishably, and its rarity,³⁹ and to be easier to

³⁷ Mourelatos' paper is not included in Dilcher's bibliography.

³⁸ "In Heraclitus' lifetime electrum (called 'gold') coinage was being replaced by silver coinage" (Seaford, 2004, p. 94: n. 34).

³⁹ Heraclitus emphasises gold's rarity in fragment 22: "Seekers of gold dig much earth and find little." (Kahn, 1979, p. 31: VIII [D. 22]); cf. Seaford, 2004, p. 237: n. 43.

exchange than large amounts of goods, for example, large weighty sacks of grain. Dilcher does not make an inquiry into why gold is considered pre-eminently valuable, or capable of being, as he says, “a universal standard of measurement” (Dilcher, 1995, p. 102). If the coins are stamped by an authority in order to fix their value, this is merely a further deepening of their capacity to retain and represent value more independently of the physical metal that is stamped, while the metal itself provides further backing of the coin’s value.

However, whether the gold is stamped or not makes little difference to the simile in the fragment. The point that Mourelatos made is that what is being exchanged could not be the objects as mere things, it could not be their physical weight, spatiality, or quantity; instead, there must be a most general qualitative component, an equivalence of value between things exchanged, which could not be a mere character-power of the objects exchanged. As such, Mourelatos finds Heraclitus to be making a compelling move away from the NMT through introducing such considerations, one that prefigures “The complexity of the conceptual structure of qualitative alternation” (Mourelatos, 2008, p. 322). We will look at fragment 90 further when discussing the ‘leaning’ of opposites and *Markedness* in Chapter 3.

§2.1 Moravcsik and the three stages of ‘explanatory patterns’

One interpreter of whom Mourelatos did not take account in his summation that was included in the reprint of his paper, of those who have held positions similar to his (both before and after his article from 1973), is Julius Moravcsik. In three papers, the first of which is from 1983,⁴⁰ Moravcsik expounded an interpretation of Heraclitus that places him, as did Mourelatos’, at the cusp of what became a revolution in metaphysics. Moravcsik frames this interpretation in terms of what he calls stages of ‘explanatory patterns’, of which he posits three. He proposes that one of the main reasons for the difficulty of interpreting the fragments is due to the ambiguities arising from what is the shift from one stage to another, which Heraclitus’ thought is responsible for (Moravcsik, 1983, p. 135). Indeed, we noted a stark example of this

⁴⁰ The first work is a chapter in the 1983 edited volume: *Language and Thought in Early Greek Philosophy*, by Kevin Robb. The second work is a chapter in the 1989 edited volume: *Ionian Philosophy*, by Konstantinos Boudouris. The third work is a 1991 journal article from *The Monist*, which is an updated version of the 1989 work that largely consists of the same material but with changes to the wording.

kind of ambiguity earlier, by way of the manner in which Mourelatos' interpretative framework was capable of shedding light on the seemingly trivial language of fragment 126 where other interpretations have failed to do so. These kinds of difficulties with the interpretation of Heraclitus, which are caused by confusions regarding the nature of the metaphysical context of his writings, are endemic in this entire tradition of scholarship.

The three stages that Moravcsik outlines are: "explanation solely in terms of origin, explanation in terms of stuff or constituency, and explanation in terms of entities and their attributes" (1983, p. 134). While these three 'stages' or 'models' of 'patterns of explanation', or 'levels of analysis', are spelt out in similar and largely equivalent ways by Moravcsik in his three papers, he does use slightly different names for them in each.⁴¹ The first two of Moravcsik's stages correspond to what Mourelatos called naïve metaphysics and, although he did not separate them explicitly as Moravcsik has done, he did separate the third stage from the other two naïve ones for similar reasons.⁴²

One of the main differences between the approaches of the two scholars that we are concerned with here or, at least, the presentation of their approaches, is that whereas Mourelatos in a broad sense focuses on the form of ontological *answers*, Moravcsik focuses on the form of ontological *questions*. What I mean by this is that, while Mourelatos is content to inquire into the contemporary meanings for the ancients of the form 'This is F', Moravcsik inquired into the meanings for the ancients of the interrogative form 'What is it?' Of course, one of these answers the other, at least to some degree, and both usually take place largely within the context of the same framework of explanation. As such, the analysis of each of the stages that Moravcsik posits is driven by an insight into the particular meaning attached to the

⁴¹ The names that he gives to the three stages are as follows: (i) In the first paper he gives no particular name to the first stage, but in the second he gives it the name "*the productive model*" (1989, p. 258), and in the third "*the productive model of ontological explanation*" (1991, p. 553). (ii) In the first paper he gives the second stage the name "*compositional explanation*" (1983, p. 136), or "*the compositional model*" or "*level of analysis*" (p. 138). In the second and third papers he calls it instead "*the constitutive pattern of explanation*" (1989, p. 260), "*the constitutive model*" (1989, p. 260; 1991, p. 556), and "*constitutive analysis*" (1989, p. 260; 1991, p. 555). (iii) In the first paper he gives the third stage the name "*the attributional level of analysis*" (1983, p. 137). In the second paper he calls it "*the attributive model*" (1989 p. 260); however, in the third paper he switches to calling it "*the ordering-structuring model*" (1991, p. 563). This last change in terminology is the one that is most indicative of a change in, or deepening of, his interpretation.

⁴² Despite the similarities between the theories we must still agree with Moravcsik when he says that "The particular three-stage development that I posit has not been—to my knowledge—pointed out before [...]" (1983, p. 134).

paradigmatic ontological question at that stage. By using the interpretative frameworks of these two scholars together we will be able to obtain a broader overview of Heraclitus' place in this revolution in metaphysical theorising and, furthermore, we will come to a better understanding of the part that the recognition of opposites played in this process. In what follows, I will explicate each of Moravcsik's stages in turn, while including their notable correspondences with Mourelatos' framework.

In the context of the first stage, Moravcsik notes that the question 'What is it?' is difficult to separate from the question 'How did it come about?' He notes that for both Homer and Hesiod, natural phenomena and the feats of some human beings were to be accounted for in terms of their origins in divine actions or parentage by the gods (1983, p. 135). The basic schema at this level of analysis is that some particular explanandum is explained by its relation to another particular entity from which it originated or by which it was produced. The relation of origination or production here is taken as unproblematic, through being taken to be analogous to parentage or artifact production (1991, p. 553). Further, the particular originating or productive entity is not itself taken to be in need of explanation; indeed, both of the entities involved in the explanation remain unanalysed in any other manner.

At this level of analysis there is no capacity to form anything like a general law, given that the entities involved are particulars and the resulting explanations lack generality. Thus, these explanations in terms of origin are not like their modern counterparts in the various special sciences that have need of them, such as biology or archaeology; rather, they are more primitive in that they do not have recourse to modern distinctions and explanations that are grounded upon an analysis in terms of the attendant properties of the entities in question. Moravcsik points out that today we can find naïve examples of this kind of explanation in instances of prejudice, such as when someone imputes a negative characteristic to someone else on the basis of their familial, religious, or racial origins, etc. (1983, p. 135).

In his two later papers, Moravcsik makes more of the important observation that at this level of analysis certain ontological matters are taken for granted and are not seen as in need of explanation. For example, there is no question raised at this stage regarding why, or in what manner, the entities discussed are unities with their own persistence; all that one could do was to appeal to the will of the gods or their actions as an explanation (1989, p. 258; 1991, pp. 553–4). Further, there is no

question raised at this stage regarding the nature of change and causality; rather, these remain unanalysed and are merely tacitly acknowledged through the analogies with procreation and production (1989, p. 259; 1991, p. 554). These aspects will become more significant later when we discuss the second stage and Heraclitus' reaction to it.

Moravcsik explains that the initial change that prompted the move away from this first pattern of explanation coincided with the move from mythical to speculative thought and the beginning of philosophy:

Explanations in terms of origin were initially mythical. The start of philosophy can be marked at the point, presumably with the Milesians, when explanations in terms of origin turn from the mythical to the speculative; that is, from identifying the originative source with some mythical entity to the identification of this source with some element known from nature. (1983, p. 136)

This change in the kind of entity serving as explanans, from the mythical and/or anthropocentric to the natural, leads to a corresponding change in the paradigmatic question and, eventually, the explanatory model. Presenting an explanandum's origins in terms of some natural element or stuff leads to a gradual transition from questions regarding origin, such as 'Where does it come from?', to questions regarding composition or constitution, such as 'What is it made up of?' or 'What is its stuff?' (1983, p. 136). Moravcsik points out that while the first stage of explanation is best suited to dynamic and organic entities, such as human actions and passions, or natural forces and events, it does not suit static natural entities and their characteristics so well, such as the relative hardness of metals or the humidity of earth or air (1991, p. 554); these phenomena call for a new framework of explanation.

Moravcsik explains that when we begin to question what something is made of, we must at least make the minimal distinction between an entity and what it is composed of, and thereby also posit mereological relations, relations of constituency, between these (1983, p. 136). With the advent of this new conceptual apparatus, which Moravcsik attributes to the early Ionian *phusikoi* (1991, p. 556), comes the shift to the second stage, that of 'compositional explanation', or 'constitutional analysis'.

Here we may note a point of confluence with Mourelatos' interpretative framework with regard to the demand within naïve metaphysics for an account of composite entities. At this point Mourelatos was careful not to apply an anachronistic conception of these basic 'thing-like' components of composite entities and, for this purpose, he introduced the notion of a 'character-power', which is on the same level as, and not ontologically differentiated from, *mere things*, as was discussed earlier. Indeed, Moravcsik, while not feeling the need to employ a new term for this purpose, is nonetheless careful to spell-out the prevailing context, that is, what still remains from the previous stage, in which this burgeoning mereological theorising takes place; this can be seen in the following passage:

We have been talking about modes of production that in everyday life have a material basis. But it would be quite wrong to suppose that ontological explanations within the productive model must have a materialist outlook. Unless we were to be given strong evidence to the contrary, we should assume that ontological contrasts such as material-mental, abstract-concrete were not drawn in the early conceptual frameworks. The move is not from materialist to dualist, but from an undifferentiated ontological framework to a gradually differentiated one. Some of the earliest concepts of those working with the productive model include fear and the deities. There is no evidence to show that these notions were used either in the framework of an explicitly materialist ontology, or within that of a dualist outlook. (1989, p. 259; cf. 1991, pp. 554-5)

We should note here that both interpreters are concerned for us not to attribute the use of modern ontological distinctions to those working within the naïve modes of theorising at this stage in the history of the discipline. Indeed, both appear to focus on the importance for their interpretations of recognising the undifferentiated or *paratactic* nature of the entities involved in the naïve theories.

Just as the productive model leaves the notions of production or origination unanalysed as intuitive primitives, the constitutive model too relies on its own unanalysed notion of a part or constituent (1991, p. 557). Moravcsik points out that there are many kinds of constitutive explanation, employing differing kinds of basic entities in their explanations; for example, there are those of the early Ionians involving observable basic entities denoted by mass terms such as 'water' or 'air', and, later, those of the Atomists involving unobservable basic entities denoted by count terms, e.g., 'atom'. Explanation at this stage also calls for principles of

transformation, causal mechanisms such as condensation and rarefaction, etc., in order to account for how one kind of stuff changes into another (1983, pp. 136–7).

As we noted earlier, the productive model of explanation was more suited to accounting for dynamic entities than it was to accounting for static natural ones; Moravcsik tells us that the constitutive model has the opposite problem in that it “does better with what seem like static phenomena such as stability and persistence, while doing less well with the phenomena of growth and development” (1991, p. 556).

Moravcsik considers the shift from the second to the third stage, that is, from construing explanations in terms of constituents to construing them in terms of attributes, to be a gradual one, and that this was due to the distinctions involved being “fairly subtle”; for example, the distinctions between the attributes of being hot or being water, and all of the heat or water (1983, p. 138). As was mentioned earlier, it is this kind of subtlety and ambiguity that he takes to be associated with the difficulty of interpreting the pre-Socratics, and Heraclitus in particular. In his first paper he includes a short analysis of two concepts that he sees as straddling stages two and three, those of *‘archē’* (‘origin’ or ‘source’) and (which is more pertinent for my purposes) *‘enantion’* (‘opposite’). I reproduce his analysis of the latter below:

The “enantia,” or “opposites,” too, can be interpreted on different levels. As one interpretation, opposites such as heat or cold can be seen as natural forces, with important causal powers. They shape the conditions of the human environment and those of the human body as well.

A more sophisticated conception represents these opposites as partly unobservable elements that are contained in everything, and whose mixture underlies a number of natural potentialities. This is the dominant conception of opposites at stage two. Once we leave the compositional level, and arrive at stage three, or the attributional level, opposites are construed as attributes. They include natural attributes like coldness, heat, dryness, and moisture, but also abstract ones like odd and even. We can treat opposites in terms of the laws of logic, rather than merely in terms of causal laws, only when we construe these as abstract elements, or at least abstract features of natural entities. Thus at stage three we treat the opposites in terms of contrariety, and contradictoriness. Above all, we can apply to them the logical operation of negation. It is a long leap from causal laws governing opposite forces to the logical laws of negation and contradiction. (1983, p. 139)

Moravcsik says that “The opposites play a key role in Heraclitus’ philosophy”, and he associates this with his contention that Heraclitus was a transitional figure between

stages two and three (1983, p. 140). Here we can note another confluence with Mourelatos' interpretation in that, as we saw earlier, he also considers Heraclitus to be a transitional figure, and that the transition is prompted by an appropriate recognition of the nature of opposition that leads to the move away from the naïve metaphysics of things.

However, Moravcsik differs from Mourelatos somewhat in his interpretation of Heraclitus' treatment of opposition in that Moravcsik thought that since Heraclitus had not quite attained to a theory at the level of stage three, that is, explanation involving attributes and the distinction between abstract and concrete, he could not have viewed the relationship between opposites as a necessary one (cf. 1983, p. 147), or at least, Moravcsik does not think that it is possible to answer whether Heraclitus did or not. While this view is hinted at in the passage quoted above through its reference to "logical laws", he states this most clearly in a much later paper, from 2004, regarding the ancient development of logic, where he says:

In tracing the notion of negation, we should start with the notion of opposites, in particular opposing natural forces like fire and water (Heraclitus), or moistness and dryness. Was their incompatibility construed as necessary and *à priori*, or as just an extreme case of clashing natural forces, is an unanswerable question. (Moravcsik, 2004, p. 8)

With regard to the necessity of the incompatibility of opposites, I will follow Mourelatos in claiming that Heraclitus did indeed hold this view and that it was an essential element in his dramatic break from the naïve metaphysics of opposition that preceded him.

§2.2 Moravcsik's interpretation of Heraclitus' move away from the naïve models of explanation

Moravcsik explains that Heraclitus reacts to the naïve models of explanation by attempting to deal with the problems that each of them faced. He says that Heraclitus "wants to develop a framework within which both the dynamic and the static is given equally adequate treatment" (1991, p. 558). This results in Heraclitus' development of a conceptual framework in which "change and stability, diversity and unity are equally fundamental, and co-exist throughout all regions of reality" (1991, p. 558).

In sum, Moravcsik's interpretation does not privilege either of the positions, referred to as the 'analytic' and 'synthetic' views, which we discussed in Chapter 1. It is clear that Mourelatos is also in agreement with this position, when he mentions in a paper from 1986, that "Heraclitus is not purely a philosopher of flux; he gives equal emphasis to the constancy and stability found in flux, to the unity found in diversity" (Mourelatos, 1987, p. 127).

Moravcsik presents three main elements of Heraclitus' break with the constitutive or compositional model of explanation: (i) Heraclitus observes that "change is not always destructive of persistence and stability, but is in many cases a necessary condition for these states"; as such, "he posits a steady and only partly observable stream of constant change as fundamental to reality" (1991, p. 560). (ii) Heraclitus posits a tension between opposing forces that results in a harmony. (iii) "Heraclitus has a new approach to numerical and qualitative diversity and sameness" (1991, p. 560). While none of these three points is entirely original in Heraclitus scholarship, Moravcsik's main contribution is that, just as is the case with Mourelatos also, he provides us with an interpretative framework from which these may be adequately motivated and explicated with greater acuity.

Moravcsik claims that Heraclitus was a pioneer in exploring ontological issues regarding the identity and persistence of entities (1983, p. 147). He presents Heraclitus as making a decisive attack on the compositional model of identity and persistence. For this purpose, Moravcsik focuses on an analysis of two of the fragments that elucidate this most clearly. These are fragment 60, 'The Road', and fragment 12, 'The River'.⁴³ In the following sections I shall address these fragments and explain how they were taken by Moravcsik to respond to the naïve compositional model of explanation.

Moravcsik considers the road to be a clear example of a common sense unity. He proposes that Heraclitus does not wish to deny that we can talk truly about such unities; rather, he wishes to refute the grounds of identity suggested by the compositional model of explanation of his predecessors. This model explained identity mereologically, on the basis of sameness of physical parts. Further, a naïve conception of the relationship between language and reality assumes that each distinct name names a distinct thing. Thus 'the road up' and 'the road down' might be

⁴³ Moravcsik treats of the road only in his first paper (1983), while the river is treated of in all three papers (1983; 1989; 1991).

naïvely assumed to be separate things. However, the point of the fragment as Moravcsik sees it is that in this case we have a single thing that is presented by way of two opposing descriptions. Thus, given the unity of the road, we should conclude that even in the case of two opposing descriptions they may still refer to the same thing. Moravcsik considers this insight to have been developed further by Plato in the *Sophist*, into a general account of sameness and difference (1983, p. 148). Mourelatos also makes this same point, again with reference to Plato's *Sophist* and also to the *Phaedrus*,⁴⁴ when he says, regarding the programmatic statement in fragment 1, that:

Heraclitus would have spoken very aptly of "dividing (διαίρεων) each thing in accordance with its φύσις and showing (φράζων) how it is," or, more literally, "how it holds together (ὅκως ἔχει)." It is important not to overlook the balanced pairing of division and collection in this line. The homonymy with Plato's doctrine of a διαίρεσις, which, presupposing a συναγωγή, cuts things ἧ πέφυκεν [*Phaedrus* 265D–E] is not fortuitous. In the realm of conceptual connections, a "division" can properly be said to be "natural" insofar as it presupposes an encompassing unity. Heraclitus and Plato seem to have responded to essentially the same idea by using similar words. (Mourelatos, 2008, p. 322)⁴⁵

This (seemingly original) interpretation of fragment 1 by Mourelatos, with the inclusion of the recognition of "the balanced pairing of division and collection" in virtue of the literal reading of ὅκως ἔχει as "how it holds together", is quite important because it adds weight to the notion that part of what Heraclitus was attempting to elucidate through his examples were their conditions of unity, 'how they hold together', or, at the very least, the need for such conditions. If indeed this was what Heraclitus intended to expound in his writings, then it would be no surprise that he would place such a programmatic statement at the beginning of his work, which is where fragment 1 is generally accepted to have been placed, in order to inform his readers of his intentions.

⁴⁴ Mourelatos mentions, in a footnote to the final sentence of the quoted passage, that: "Plato is aware of the fact that the language of collection and division he employs in his account of the realm of forms is adapted from Heraclitus: see *Soph.* 242C–243A (esp. 242E), which prefigures 251E ff. (esp. 252B)" (Mourelatos, 2008, p. 322: n. 62).

⁴⁵ The square brackets reproduce Mourelatos' footnoted reference to Plato for the Greek phrase that precedes them.

§3.1 *The example of The River*

In this section I will discuss an emblematic example from Heraclitus' fragments, that of the River. There are three fragments that mention the river, fragments 12, 49a, and 91. Fragment 12 is generally considered to be an authentic quotation of Heraclitus while, in the main, it has been the other two fragments that have been disputed by some.⁴⁶ I will not attempt to make any decisive contribution to the debate as to the authenticity of the fragments. However, my preference is to follow other scholars in taking fragment 12 as an authentic quotation and to take the other two fragments as possibly being readings (or misreadings) of this fragment. Moravcsik says that his "sympathies lie with Vlastos" in ascribing all three fragments to Heraclitus,⁴⁷ but he does not believe that what he says about the example of the river hangs on this, and asserts that it would still be valid even if we only accept fragment 12 as primary, as Kirk did (Moravcsik, 1983, p. 149).

The River fragment has long been seen as an emblematic statement of Heraclitus' philosophy and is widely known, even among those who may never have heard of Heraclitus. It is often referred to in the form that it is found in Plato's *Cratylus* at 402a:

Heraclitus says somewhere that "everything gives way and nothing stands fast," and, likening the things that are to the flowing (*rhoē*) of a river, he says that "you cannot step into the same river twice." (Plato, 1997, p. 120: *Cratylus* 402a)

It is this saying, "you cannot step into the same river twice", that has captured the imaginations of many generations of scholars and others also. It is, perhaps, a notion that has been over-romanticised without full consideration being given to its

⁴⁶ For example, see (Kirk, 1954, pp. 373–5); (Hussey, 1972, pp. 54–5); Kahn says of fragment 12 that "This is the only statement on the river whose wording is unmistakably Heraclitean. It does *not* deny the continuing identity of the rivers, but takes this for granted" (1979, p. 167); McKirahan says that fragment 12 "is probably the only authentic river fragment" (2010, p. 118: n. 19); Marcovich says of fragment 12(a) that "This is the *only* original form of the river-statement (correctly Kirk 374 *contra* Vlastos 338 ff.)" (1966, p. 23); Vlastos agrees with Kirk that all three cannot be kept, but would prefer to reject fragment 12, if any: "the one I would sacrifice is B 12, for it is the flattest of the three, and can be better explained as a smoothing down of B 91a [...] and B 49a" (1955 p. 343). However, he also says in a footnote that: "I have misgivings about dropping even B 12. It has its own peculiar stylistic beauty, best noticed by H. Fraenkel" (1955, p. 343: n. 15); McCabe reports that "12 is generally preferred", but chooses to retain all three and incorporate them into her dialectical interpretation (MacKenzie, 1988, pp. 2ff.).

⁴⁷ This is a slightly simplified version of Vlastos' view.

consequences. It appears to tell us something informative that we did not know or realise about rivers, i.e., that they are momentary entities that are there at one instant and gone the next. This has been taken by many, especially those who advocate for a theory of 'flux' in Heraclitus, as a particular example of a more general fact about the nature of reality, i.e., that in some manner and to some degree "everything gives way and nothing stands fast", that everything changes or is changing.

Fragment 12 is considered by most scholars to be a genuine fragment of Heraclitus; it reads as follows: "As they step into the same rivers, other and still other waters flow upon them" (Kahn, 1979, p. 53: L [D. 12]). Moravcsik's interpretation of the example of the river is, in a sense, not a new one. It has been suggested by a number of scholars that, instead of doubting the possibility of the persistence of rivers, Heraclitus accepted the common sense notion of a river and sought to explain it.⁴⁸ What is distinctive about Moravcsik's interpretation is that it provides us with a motivation for this view, that is, a reason why Heraclitus addressed the issue in this manner. Moravcsik holds that Heraclitus was responding to the notion that *what it is to be* a certain river is merely to be composed of certain parts, for example, its waters, riverbed, and riverbank.⁴⁹ As such, the example of the river is a useful image for someone, such as Heraclitus, who wishes to point out the flaws in the compositional model of explanation. Adhering to this model of explanation would lead to the absurd consequence that rivers are never the same from one moment to the next due to some or all of their parts flowing away and being replaced by others.

It is manifest that fragment 12 does not straightforwardly suggest a reading like "we cannot step into the same river twice". It can only be made to do so if one has already identified the river merely with the waters, etc., that it is composed of. That is, we cannot step again into the same river because that river has dissipated as a result of some of its parts flowing away downstream. On this reading then, there is no great mystery it would seem. River water flows away and therefore we cannot step into it again (and even if we can it will be at a different part of the riverbed and bank, cf. Moravcsik, 1983, p. 149; 1991, p. 564). However, on this reading the unity and

⁴⁸ For example, David Wiggins says that: "On the view I take of Heraclitus, it was the maintenance or perpetuation of the world order—and within that order the persistence through time of things such as rivers ('the same rivers')—that Heraclitus set out to describe, redescribe and explain" (2012, p. 3). See also, Marcovich (1967, pp. 212–3) who quotes Reinhardt and Vlastos in this regard. Marcovich himself also considers the river to be another example of the Unity of Opposites thesis (p. 213).

⁴⁹ Moravcsik explicitly uses the locution "be what it is" when outlining Heraclitus' general approach to sameness, which I take to be an allusion to the essence of a thing (Moravcsik, 1991, p. 561).

persistence of the river remains unexplained. This would seem to have the consequence that the thinker who adopts a naïve compositionally based account of rivers would have to admit that they do not really live in a world that contains rivers at all. Indeed, this may have been the point behind Cratylus' view, which is reported by Aristotle in *Metaphysics Gamma* at 1010^a10–15, that we cannot step into the same river even once, and that we ought not to speak at all and instead use bodily gestures such as moving a finger. In connection with this, we should recall what Mourelatos has said about language being “dispensable” and “merely a convenience” for the NMT, given that it does nothing more than can be accomplished through bodily movement (Mourelatos, 2008, p. 303). Certainly, on the compositional account, any talk of rivers that is intended truly to pick out these individuals in the world would not succeed in doing so. This conclusion would then also hold for all other individuals if everything is changing its parts to some degree or, at least, merely in the minimal sense that “sameness of parts is not a guarantee of persistence” (Moravcsik, 1991, p. 564).

Moravcsik considers Heraclitus' use of the river to be providing what is merely a negative criticism of the prevailing naïve compositional conception of metaphysics, while Heraclitus' positive view must be inferred from the other elements of his philosophy. Moravcsik expresses this thus:

Heraclitus tells us what does not account for the persistence of the river. His positive view must be inferred from other fragments; indicating that the persistence of the river is a matter of changes in water constituency according to certain principles of measure. (Moravcsik, 1991, p. 564)

The ‘principles of measure’ must ultimately been seen as being provided by the *Logos*. Indeed, the unity of opposites is not absent from the situation involving the river. In fragment 12 we should notice that there is a relation posited between *sameness* and *difference*. It is in virtue of the fact that the river flows and changes that it is a river and persists as such. If the river did not continually flow, if it was converted into a canal or a static body of water, or perhaps if it burst its banks or lost its ‘measure’ in some other fashion, then the river may be lost with it despite an abundance of waters (cf. Moravcsik, 1991, p. 564).⁵⁰

⁵⁰ Similar interpretations have been proposed by other scholars, such as Richard McKirahan: “If the water stopped flowing it would no longer be a river but a long narrow lake. If the basic forms of matter

I wish to take issue with Moravcsik on a minor point where he says that “If the water remains the same within the riverbank, then the result is a stagnant body of water, eventually drying out. Sameness of parts not only does not sustain, but kills the river” (Moravcsik, 1989, p. 266). I feel that Moravcsik may have slightly overworked his interpretation here, but this consideration may be illuminating nonetheless. Firstly, a river drying out precisely does *not* maintain its parts; some of them flow into the atmosphere and the ground. Secondly, let us for a moment extend the common sense notion of a river beyond what is usually found in Heraclitus’ example, i.e., a ‘perennial’ river. It might even be claimed that a river is still the same river even if it has dried up, i.e., it would be a ‘river run dry’ that is *disposed* to flow again. Indeed, some rivers do run dry periodically before flowing once again, and in such cases we would surely not say that they are different rivers. Nonetheless, this case of an ‘intermittent’ or ‘ephemeral’ river would still be an example that is in favour of Heraclitus’ view as we are presenting it here, given that the sameness of the river does not depend on its parts but instead the ‘measure’ of a river, the river’s *logos*. That is, even some extreme changes that involve a river drying up are not necessarily destructive for a river, although this leaves open the possibility that they may well be so in certain cases.

§3.2 Aristotle’s assessment of Heraclitus’ road claim

Similarly to the example of the river, Moravcsik considers the road, in fragment 60, to be a clear example of a common sense unity, and he thinks that the point of the example for Heraclitus is that it is a single thing that is presented in two ways. Thus, the conclusion to be drawn from the example is that, although the road can be given two opposing descriptions, they may still refer to the same thing. Relying on this conclusion, Moravcsik makes the further interesting observation that:

In modern times the problem is reformulated into semantic terms and becomes the focus of much of contemporary philosophy, starting with Frege’s famous example about the Evening star and Morning Star. (Heraclitus would have liked the Fregean example since it involves opposites.) (Moravcsik, 1983, p. 148)

stopped changing, the stable, ordered, regulated *kosmos* would cease to exist.” (McKirahan, 2010, p. 134).

This observation will become important for my purposes again in Chapter 5, when I will draw a parallel between the situation we have been discussing in ancient metaphysics with special regard to opposites, and the situation in philosophy after the ‘linguistic turn’. Moravcsik is not the only interpreter to have observed parallels between Heraclitus’ and Frege’s examples. A similar point was made by Edward Hussey around the same time, albeit indirectly, in the context of his commentary on Aristotle’s *Physics* III.3, where he notes that Heraclitus’ example of the road is adapted by Aristotle as an example of a failure of ‘Leibniz’ Law’, i.e., “that all the same things are true of things that are the same” (Hussey, 1983, pp. 69–70).⁵¹ Hussey recommends the thesis that “there is some analogy between these apparently disparate theories, and [...] that Aristotle was concerned (to some extent) with the same phenomena as helped shape Frege’s theory” (Hussey, 1983, p. 70).

However, for the purposes of this section and, indeed, those of this thesis more broadly, I do not intend to engage directly with the Aristotle scholarship on these topics given that there are a number of contentious issues in the literature regarding this chapter from the *Physics*, which involve the interpretation of Aristotle’s philosophy and its development as a whole; engaging with these issues would lead us too far afield at the present juncture. Instead, I shall concentrate on considering Aristotle’s use of Heraclitus’ example of the road only insofar as it is an assessment of the claim that Heraclitus made, i.e., that the road up and down is one. This is a topic of investigation that has largely been ignored in the literature on Heraclitus’ fragment 60, but, as we shall see, it is fruitful to consider given that Aristotle’s focus in the context revolves around the notion of identity. It will be helpful at this point to outline the context of Aristotle’s usage of the example of the road.

Aristotle employs the example of the road in *Physics* III.3, at 202^a19–20 and ^b13–14, in order to elucidate the manner in which “that which produces and undergoes change” is one (Hussey [Aristotle], 1983, p. 4: 202^a20). He supposes that

⁵¹ It seems likely that Hussey arrived at this interpretation through a consideration of an article by Nicholas P. White from 1971 entitled ‘Aristotle on Sameness and Oneness’, in which the latter mentions this passage in connection with a restriction of Leibniz’ Law in the same sense. However, White does not discuss the passage in detail. It should be noted that White provides an incorrect reference for the location of Aristotle’s statement of the restriction at 202^b14–16; White gives 212^b14–16 (White, 1971, pp. 179–80). In his bibliography, in addition to White’s article, Hussey also mentions Edwin Hartman’s 1977 book *Substance, Body, and Soul*, in which the same passage is treated of briefly (Hartman, 1977, pp. 78–9).

“even if to act upon and to be acted upon are the same” in some sense of ‘same’, it does not follow that the thing acting (e.g., a teacher) and the thing that is acted upon (e.g., a learner) are the same thing. He says that this would follow only if to act and to be acted upon are the same in the sense in which ‘raiment’ and ‘clothing’ are the same, that is, “the same in the sense that the definition that gives the ‘what it was to be’ is one”, i.e., only if they are identical in *essence*. Instead, Aristotle says that they are the same “in the sense in which the road from Thebes to Athens is the same as the road from Athens to Thebes”, by which he implies that they are the same in the sense of some lesser kind of identity than that of identity in essence (Hussey [Aristotle], 1983, p. 6: 202^b10–14). So, while in the case of ‘raiment’ and ‘clothing’ they are identical in essence, in the case of to act upon and to be acted upon, and also in the case of the road from Thebes to Athens and from Athens to Thebes, they are one in some sense that is lesser than that of identity in essence. On the basis of this reading it is possible to reconstruct Aristotle’s assessment of Heraclitus’ identity claim regarding the road. That is, on Aristotle’s view, Heraclitus’ identity claim is plausible only if the identity in question, between the road from Athens to Thebes and the road from Thebes to Athens, is a lesser sort of identity than identity in essence. As such, Heraclitus’ identity claim is considered, by Aristotle, not to be plausible, or even to be quite implausible, if it is understood to be claiming an identity in essence.

There would seem to be a number of ways in which one could take Aristotle’s assessment of Heraclitus’ identity claim, depending on whether we take Aristotle’s position regarding identity in essence to be correct or incorrect, and further, depending on whether we take Heraclitus’ identity claim to be about identity in essence or not, and in what way. We should also note that, whereas it is true that Aristotle does have a general and quite flexible notion of essence, that is, a notion corresponding to the questions ‘What is it for this thing, X, to be the very thing it is?’ and ‘What is this thing, X, by virtue of itself?’ (Politis, 2004, p. 234), in this passage he appears to be working with a more specific and more specifically Aristotelian notion of essence, which crucially involves the distinction of underlying subject (*hupokeimenon*) and property. The options that we have, then, are as follows. We could (i) deny that Aristotle is correct, precisely because Heraclitus’ identity claim is as plausible and significant as the latter intends it to be, even if the identity claim is understood as claiming identity in essence; or (ii) accept that Aristotle is correct in his assessment, because Heraclitus intended his claim in terms of identity of essence,

given that he would not have intended his claim to be viewed as claiming a qualified or lesser sense of identity; or (iii) accept that Aristotle is correct, but that Heraclitus would not have minded this given that the identity claim only claims an identity less than identity in essence; or (iv) the very distinction between identity in essence and a lesser identity is not applicable to Heraclitus, because he had no notion of essence; or (v) the very distinction between identity in essence and a lesser identity is not applicable to Heraclitus, because he, even if he has a notion of essence, does not rely, for this notion, on any distinction between subject and property.

(iv) and (v) above, can be ruled out by the following considerations regarding Heraclitus' understanding of *essence*. Certainly, we must not claim for Heraclitus an understanding of essence that is only later articulated within a metaphysical system such as Aristotle's. However, it does not follow from this that we must deny that Heraclitus had any understanding of essence whatsoever. That is, we need not deny that Heraclitus sought to put forward any notion of the 'what it is to be' of things commonly encountered in experience. As was mentioned earlier in this chapter in relation to Mourelatos' reading of fragment 1, Heraclitus is very much concerned with the 'what it is to be' of things in the sense of being concerned with "'dividing (διαίρειν) each thing in accordance with its φύσις and showing (φράζων) how it is," or, more literally, "how it holds together (ὅκως ἔχει)" (Mourelatos, 2008, p. 322). Subsequently, in the section immediately prior to the current one, we discussed Heraclitus' treatment of the river as being a particular example of this concern. Regarding that example we saw that Heraclitus rejected the naïve compositional account of the 'what it is to be' of rivers in favour of an account that recognises that rivers exist according to a 'principle of measure', i.e., that they in some manner accord with the *logos*.

As such, this concern of Heraclitus', with the 'what it is to be' of things, is a proto-notion of essence that I shall refer to as *proto-essence* for short. This is not to say that Heraclitus grasped or was beginning to grasp a principle that is in general set against that which is later grasped by Plato, Aristotle, and their successors. Rather, that Heraclitus grasped the need for such a principle and attempted to expound it as best he could against a background of the naïve compositional understanding of what it is to be anything in particular. His successors, of course, expound their own understanding against the theoretical background of their own time and concerns, which includes Heraclitus' theorising. It will be advantageous to consider further

Heraclitus' notion of proto-essence, in the next chapter, when considering the status of the *logos*. For now though, we will return to our consideration of Aristotle's assessment of Heraclitus' claim regarding the road.

On the basis of these considerations we can rule out (iv), given that, at the very least, Heraclitus distinguished between identity in terms of the proto-essence, i.e., the 'what it is to be', and identity in terms of constitution, i.e., sameness of physical parts, (and, perhaps, sameness of origin). We may also rule out (v) for the same reasons and, in addition, by noting the fact, presented above, that Heraclitus' notion of proto-essence is not aimed at any principle that is set against that which is presented by later philosophers, and that, broadly speaking, all these notions are aimed at the same principle, i.e., the 'what it is to be' of a thing, whether or not these notions are spelled out in terms of underlying subject and property. The important point is that Heraclitus can be seen to have been consciously separating the 'what it is to be' from the naïve notion of physical constitution (and, perhaps, origin).

We can reject (ii) on the basis that Heraclitus did not wish to identify the essence of the road up and the essence of the road down. I say this because, as I have explained in Chapter 1 with the help of Dilcher's analysis, Heraclitus does not wish to identify opposites to the extent that they collapse into an indiscriminate unity. That is, their essences must remain distinct yet 'unified'. In this regard, it may be helpful to recall the examples of night and day (fragment 57), and the bow (fragment 51). In the case of night and day, Heraclitus does not wish to claim that they do not mutually exclude each other, and yet he claims that they are one through being opposed aspects of the same event. In the case of the bow, we have another example of a singular thing (similar to the road) which 'agrees at variance with itself', it contains both converging and diverging forces that are each necessary for the bow to be, and that mutually precipitate each other, yet they are opposed to each other. I suggest that, in the case of the road, we should interpret the identity claim in an analogous manner.

In Chapter 1, I outlined my own interpretation of fragment 60 in response to Dilcher's claim that the unity of the road up and down consisted merely in the material instance of the road. Against this view I claimed that what fragment 60 says about roads can be generalised to encompass a claim about spatial dimensions, i.e., that they necessarily have two poles or directions. Thereby, they admit of at least two descriptions; the dimension X-Y can equally well be described as the dimension Y-X,

where X and Y are replaced by any two opposite directions, such as 'up' and 'down', 'to' and 'fro', etc. In Heraclitus' hypotactic metaphysics these things are opposed in relation to a more general thing that unifies them, which can be expressed by a superordinate term, for example, 'vertical', 'horizontal', 'oblique', etc. Instances of roads, fences, paths, etc., all involve instances of this common dimensional pattern, which can be extended to any topologically equivalent linear form (curved, angular, etc). Thus, on this view, part of what it is to be a road is to involve this dimensional pattern. This entails that Heraclitus' notion of the proto-essence of a road must involve an understanding of the road in terms of hypotaxis; that is, a road traces a particular route between two points, and in virtue of this it can be described as running 'to' and 'fro', from Thebes to Athens or from Athens to Thebes, etc. This system allows for the fact that the same road can be described in two opposing ways.

There are certain similarities between the examples of the road and the river, in the sense that, just as with the river, the material makeup of the road is not essential to it. For example, consider the cases in modern Ireland where certain routes have been bypassed by motorways or, at least, wide modern roads. These roads are often referred to as being 'the new road', while the original routes are referred to as 'the old road' and are considered to be the same road regardless of whether or not they have been upgraded also, that is, undergone a change in their material constitution and width, etc. Analogously to the example of the intermittent or ephemeral river, if a road gets swept away in a landslide it has not necessarily gone out of existence for good, because the same road can subsequently be rebuilt and still be the same road, just as an 'old road' would. Thus, on behalf of Heraclitus, we may draw the same distinctions that are implicit in the river example. The road persists as a unity not because its material instantiation was produced by the same people at different times, nor because it is composed of the same material parts, given that neither of these conditions necessarily hold; rather, it persists as a unity because it has the same *essence* and accords with the same *logos*. This is a *logos* that 'agrees at variance with itself' because it is made up of the *logoi* of two essential aspects of the road, its 'to' and its 'fro' or, in Aristotle's version, the road from Thebes to Athens and the road from Athens to Thebes. Due to this agreement, whenever someone builds a road from Thebes to Athens they also have built a road that leads from Athens to Thebes, that is, these two roads always have the same origin. Similarly, the material constitution of the road from Thebes to Athens is always the

same as the material constitution of the road from Athens to Thebes. However, this does not imply that the one road is always made of the very same material at all times, or that it has the very same origin at all times. Further, and contra Dilcher's interpretation, it is not that the identity of the 'to' and the 'fro' holds merely in virtue of the two ways having the same material parts and origin, rather, it holds ultimately due to the relationship between the *logoi*, and thereby the essences, of the 'to' and the 'fro' and that of the one road.

On the basis of these considerations, we should rule out option (i) above, and instead opt for (iii). That is, Heraclitus' identity claim should not be interpreted as being in conflict with Aristotle's assessment, because although both the road up and road down are related through being necessary aspects of the essence of the one road, Heraclitus is not claiming that the essences of these aspects, which remain distinct from each other, are identical.

CHAPTER 3: The Unity of Opposites, Markedness, and the Logos

Abstract of Chapter 3

Now that, with the help of two critics, we have situated Heraclitus' project and understood what his target was, we are better equipped to take up again, and answer, the problems raised by Dilcher. In doing so, we shall be making use of tools that have been introduced till this point, as well as one new tool especially, namely, *Markedness*.

I shall argue that Dilcher was incorrect to question the presence in Heraclitus of the Unity of Opposites thesis. That *Markedness* further reveals the hypotactic nature of Heraclitus' metaphysics. That the *logos* is not the law and measure of all things, rather, it is that which the speaker is in communion with in order to have the capacity and competence to express the 'what it is to be' of the things and the reasons for the necessity of their interactions, but cannot itself be described directly.

In doing so, we will be analysing and responding to Dilcher's three problems in light of Mourelatos' interpretation. Showing that what prompts these problems is, ultimately, a misunderstanding regarding *Markedness*. Analysis of the differences between the interpretations of Dilcher and Mourelatos regarding the status of the logos, in part through their reactions to the views of Willem Jacob Verdenius.

By way of reminder, the three problems articulated by Dilcher were as follows: (i) Heraclitus does not use the term *enantia* or any equivalent term. (ii) There is no clear answer to the question whether there is, over and above the many examples of opposition, a single doctrine regarding opposition. (iii) Ascribing such a doctrine to Heraclitus runs the danger of Aristotelianizing him.

Introduction

In the previous chapter, we discussed the frameworks that have been suggested by Mourelatos and Moravcsik and their resulting interpretations of Heraclitus' philosophy. In this chapter, I will examine some of the main points of conflict between the work of Dilcher and that of Mourelatos, while exploring some additions

and amendments to their views. These are two scholars who have not interacted to any great extent with each other's views, but who discuss many of the same issues. Thus, part of my aim is to bring their views into contact with each other regarding these issues.

In the first section of this chapter, I will respond to Dilcher's three problems for the unity of opposites, drawing on the interpretations that were discussed in Chapter 2. In the second section, I will consider what Mourelatos called the 'leaning' of opposites, and that Dilcher saw as being a 'vicious circle', which we will see is better described in terms of a phenomenon known in linguistics as *Markedness*. In the third section, I will investigate the notion of the 'Logos' in Heraclitus; in particular, I will assess the differing interpretations of Mourelatos and Dilcher and their disagreements with the interpretation proposed by the Dutch scholar Willem Jacob Verdenius.

§1 The solutions to Dilcher's three problems with the formula 'unity of opposites'

In Chapter 1, I briefly outlined the three problems that Dilcher has proposed for the interpretation of Heraclitus in terms of the formula 'unity of opposites'. These problems were first proposed by Dilcher in his 1995 work, *Studies in Heraclitus*; however, they were not explicitly presented as a list of three important problems until his 2013 paper, 'How Not to Conceive Heraclitean Harmony'. In this section, I will present solutions to these problems, which will draw upon the views of Mourelatos that were presented in Chapter 2.

§1.1 Problem one

The first of Dilcher's problems with the interpretative formula 'unity of opposites', is that Heraclitus does not use the standard Greek term of the time, *enantia*, to refer to his 'opposites'. This fact is indeed indisputable, at least for the extant fragments. However, we must ask what force this fact provides as part of an argument against the 'unity of opposites'. Initially, we may agree that it has a certain verbal force in the sense that if the word 'opposites' is not used by Heraclitus, then neither is the phrase 'unity of opposites'. This is of course true, and we must agree that, for this reason,

'unity of opposites' is probably not the perfect phrase for its purpose given that it could not occur in the extant fragments. Yet, it has become a term of art in the literature, which Dilcher himself cannot avoid using entirely and, as such, he resorts to placing it, and indeed the word 'opposites' also, in scare quotes in most instances.

However, I take it that there is more to Dilcher's objection than this mere verbal mismatch. It is what this verbal formula leads us to consider that is the problem for Dilcher; it is the way we conceptualise 'opposites' and, following from this, our conceptualisation of 'the unity of opposites', in terms of 'opposition' and 'unity' which is the problem. Indeed, I will also address a similar issue later, in Chapters 4 and 5, in the sense that linguistically and psychologically we often take opposites to be radically and maximally opposed to each other without recognition of their unity. Dilcher's point would seem to be along the same lines; i.e., that an analysis in terms of 'opposition' and 'unity' hampers attempts to explain Heraclitus' doctrine in a manner approximating how he himself might have done (cf. Dilcher, 1995, p. 108).

However, it should be noted that this contention is premised on the notion that we do in fact understand opposites in this way. Presumably, for those who have studied the relevant theories of opposites and are avid interpreters of Heraclitus, or indeed for those who simply see things differently, this will not be such a big issue. The point here is that it is not necessary that we conceptualise opposites in the manner in which Dilcher implies that we do, therefore it is not necessarily the case that the use of the word 'opposites' will lead everyone astray.

The core of Dilcher's objection to the use of the word 'opposites', however, still functions quite well as an interpretative explanation of why Heraclitus does not use the word; i.e., that Heraclitus sought to avoid alluding to a naïve understanding of this phenomenon and, as such, avoided using the familiar term *enantia*. As we have seen in Chapter 2, both Mourelatos and Moravcsik provide us with a reconstruction of the naïve view that Heraclitus was attempting to move beyond. This provides us with an answer to the first of the problems that Dilcher posed for the unity-of-opposites. The reason that Heraclitus does not use the term for 'opposites' (*enantia*), is that he is attempting to distance his own theory from the talk of *mere opposite things*, which came before him. The word would not have been appropriate to his theory given that

in contemporary usage it would have been bound up with the paratactic NMT,⁵² in the sense that the word *enantia* would have led the reader to conceive of opposition in terms of spatial relations, and warring opponents or physical things being opposed to each other externally. Furthermore, the word would not be appropriate given that the entities that came under this concept in previous thought were seen as being radically opposed to each other without any unity; as such, the word *enantia* would pick-out only one side of the nature of opposites that Heraclitus wished to expound, and would refer only to *mere things* without any abstract or qualitative component.

To summarise, Dilcher's first problem cannot be seen as an adequate objection to the doctrine of the Unity of Opposites. This is because Heraclitus avoided using the word *enantia* for the very purpose of helping to elucidate that doctrine, while dispelling the naïve conception of opposition that came before him, with which the word was associated. Dilcher's mistake is to assume that because Heraclitus did not use the term 'opposites' he did not wish us to interpret his uses of pairs of antithetical terms under *any* conception of opposition. However, by reading Heraclitus as reacting to naïve metaphysics, for example, as reconstructed by Mourelatos and Moravcsik, we can see that, although Heraclitus was rejecting one notion of opposition associated with the word *enantia*, he was not intending to reject the notion of opposition as such, rather, he sought to reconceptualise this notion.

§1.2 Problem two

Dilcher's second problem is that he thinks that there is no unitary doctrine of the Unity of Opposites to be found in the fragments; i.e., that there is no single formula that could be elucidated that would be applicable to all instances of unity of opposites. The reason that Dilcher thinks that there cannot be a single formula is that it would result in either: (i) such a formula failing to cover all instances and, as a consequence, Heraclitus' thought would be portrayed as being inconsistent; or, (ii) such a formula being broad enough to accommodate all instances, but as a consequence of this being empty and indeterminate. What we find here are two horns of a dilemma that is set up to show that any attempt to derive a unitary formula, which will be applicable to all instances of unity of opposites, will fail

⁵² Cf. Mourelatos, 2008, p. 313: n. 33.

because it will necessarily be either, in the case of (i) too constrictive, or in the case of (ii) too loose. Due to this it will either, in the case of (i), not cover all the phenomena in question, or, in that of (ii), will cover them all but in a way that is somehow uninformative or lacking in explanatory content.

It is important to ask here: What motivated this dilemma? That is, what is it that both horns of the dilemma take as their common assumption? Both horns take the diversity of the instances as a common assumption, and both sides assume the solution to be a unification of this diversity under an explanatory formula; as such, (i) then fails by failing to unify, while (ii) fails by failing to be explanatory. The problem here is the supposed diversity of the instances and the need for their unification, in this case an interpretative need. As such, the context of this interpretative problem is itself another instance of the unity-of-opposites; it is itself a kind of *hen panta* situation in which the one and the all are unified. Dilcher's reaction to this situation is linked to his interpretation of the *hen panta* proper; i.e., he does not think that the relation between these aspects can be explained in a static and unitary way, but instead must be explicated dialectically and in a manner that never comes to a standstill. However, there is a difference between these two situations. In the case of this interpretative problem we attempt to unify diverse instances, but in the case of the *hen panta* proper, and according to Dilcher himself, Heraclitus is attempting to elucidate a unification that is in fact eternal, and which is already present and functioning prior to analysis; i.e., it is not something that is in any way accomplished by Heraclitus or his doctrine, which would have to begin in some way with a diversity out of which a unity would then be contrived.

Given that it is the diversity of opposites that is at the root of Dilcher's dilemma, it is important to assess what kind of diversity this is. We should note in this regard that Dilcher is primarily referring to the diversity of particular examples of unity-of-opposites in the fragments, but it is not clear that this is the correct procedure. Rather, for the purpose of finding a unitary formula for the unity-of-opposites, it is important to assess the diversity of the opposites *qua opposites*, and not *qua* their particular occurrences. What I mean by this is that it is not in virtue of a particular situation that a particular pair of opposites is unified, rather, for Heraclitus opposites are unified just by being opposites.

For example, in terms of fragment 60, it is not because there are instances of roads in the world that the opposites *up* and *down* are unified, they are unified

because they are opposites; i.e., they are unified in respect of being opposites, not in respect of being applicable to aspects of a road. The point is that there is something essential to being an opposite that implies a certain unity with its opposite term, quite independently of the particular situation in which they are involved that displays this unity in some manner. As a consequence of viewing the problem as one of diversity, Dilcher finds it to be impossible to extract a unitary formula to cover this diversity.

In light of these considerations, we can see that Dilcher's proposed problem seems to rely on the assumption that there is no commonality to the various opposites, that they are not known as 'opposites' in virtue of some common trait. However, he does not make any inquiry in this direction and does not make it explicit as an assumption. For example, the pairs of opposites taken *prima facie* are not diverse, in the sense that the term 'opposite' may be, pre-theoretically at least, applied to each of them. If we were to distinguish different kinds of opposites *qua opposites*, and then show that, with regard to the unification of the particular instances of each kind, a single formula cannot be produced that would cover all kinds (due to their diversity), then and only then should we be willing to grant Dilcher a certain analogue of his proposed dilemma. However, it is clear that Dilcher has not made the necessary steps to motivate his dilemma in this way.

One solution to this problem lies in the fact that, according to Mourelatos, the relation between opposites is an "internal relation of complementarity" (Mourelatos, 2008, p. 315). As such, although the examples of opposites that we find in the fragments are diverse, it is incorrect of Dilcher to say that "the logic of their being one would perforce be almost equally diverse." (Dilcher, 2013, p. 264); this is because, at the very least, in each instance they form a unity, a 'back-stretched' or 'back-turning' harmony, in the very same fashion. They are each at the outset internally related to their opposite, and this in turn is the reason behind the particular examples of opposition. It is not that unification is an operation that takes place externally between opposites that are separate from each other, which is a point that Dilcher himself is also at pains to convey, albeit along different lines; instead, it is the very 'logic of their being' (to use Dilcher's words) that involves a unification with their opposite. In this sense, the 'unity' of each pair of opposites very much follows the same formula. There may also be reasons independent of Mourelatos' interpretation to think that there can indeed be a single formula of the unity of opposites. For

instance, it may be the case that different kinds of opposites still have a common nature qua opposites.

§1.3 Problem three

Dilcher's third problem with the unity-of-opposites has to some extent already been adumbrated in Chapter 1 when we discussed the Immanent/Transcendent distinction. It is clear from the discussion of the broader issues surrounding this problem that any solution to Dilcher's objection proper will not necessarily be adequate to attend to these broader issues that it has given rise to. This having been noted, we will now focus solely on Dilcher's third problem as it stands and leave these further issues aside for the moment.

Dilcher motivates this problem in a manner similar to how he motivated his second problem; indeed, in his earlier work from 1995 the two problems are difficult to separate, and they have in common an appeal to a dilemma between strict or constrictive interpretation and loose or vague interpretation. In the case of problem three he proposes a dilemma between taking the unity-of-opposites as either: (i) a strict identity e.g., "day is night"; or (ii) as an 'underlying unity' e.g., "day and night are one in respect of something else, for instance of the continuum of time they both occupy" (Dilcher, 2013, pp. 264–5). The first horn has often been adopted both by those who wished to show that Heraclitus violated the principle of non-contradiction, and by those who claim that he only did this to draw attention to the principle itself, both of which involve interpreting his doctrine of the Unity of Opposites as positing the strict identity of opposites. In the case of the second horn, those that have sought to save Heraclitus from contradiction have interpreted him as positing a unity 'underlying' the opposites, or on a 'higher level'. In his 1995 work, Dilcher objects to both of these kinds of interpretation. He rejects (i) on the grounds that only some of the Heraclitean fragments are capable of being read as stating formal contradictions, and even then "only at the cost of excessive simplification" (Dilcher, 1995, p. 106); he also rejects (ii) on the grounds that such a loose interpretation of the unity-of-opposites, as being 'underlying' or on a 'higher level' oversimplifies Heraclitus' doctrine and does not account for his own description of it in fragment 51 as being a 'back-stretched (or back-turning) connection' (Dilcher, 2013, p. 265).

What is common to these approaches is that they both rely in some way on reading Heraclitus as a proto-Aristotelian, or as having dealt with theoretical issues that are, properly considered, Aristotelian issues. Those who read Heraclitus in terms of the first horn of the dilemma, (i) above, as positing a strict identity between opposites, wish to claim either that Heraclitus was consciously prefiguring the principle of non-contradiction or that he was unconsciously violating it. As we discussed in Chapter 1, Dilcher exposes that such formal contradictions are not present in the text and can only be read into it through an act of excessive simplification. As such, his main target, which has remained his main target in his recent article, is the second horn of the dilemma, (ii) above. This is a hereditary interpretative formula that, as Dilcher says, turns Heraclitus “surreptitiously into a premature Aristotelian” (2013, p. 265). It is a view that was held by many of the prominent interpreters of Heraclitus over the last century, chief among them being, Burnet, Kirk, Kahn, and Marcovich (cf. Dilcher, 1995, p. 104: n. 5). However, Dilcher argues that this phrase ‘underlying unity’ has its origins in Aristotelianism, given that the term ‘underlying’, ultimately comes from Aristotle’s notion of substance, *substratum* or *substantia* in Latin, or ὑποκείμενον (*hupokeimenon*) in Greek. As such, Dilcher’s objection is that when we interpret Heraclitus in this way, we interpret him anachronistically. Also, as we saw earlier, Dilcher rejects this interpretation because it is an interpretation of the unity-of-opposites as being *transcendent*, i.e., that the ‘unity’, as substance, functions as a third term that underlies the two opposites and unifies them.

Although Dilcher does provide support for his reading of Heraclitus through reference to the fragments, for example, in his recent paper, to the ‘back-stretched harmony’ of fragment 51 (Dilcher, 2013, p. 265), it is Mourelatos’ interpretative framework of the pre-Heraclitean NMT that explains why it is not even feasible to interpret Heraclitus as holding the notion that the unity-of-opposites obtains in virtue of a *transcendent* or ‘underlying’ unity. That is, since Heraclitus abandons the NMT’s requirement of *thinghood*, there are no *mere things* in his ontology, and certainly nothing that we could refer to as a substance that has independent existence (Mourelatos, 2008, p. 319). While Mourelatos also refers to the unity-of-opposites as an ‘underlying unity’, which he identifies with ‘God’ or, more specifically, the unity of God’s phases (Mourelatos, 2008, p. 317), this may merely have been out of verbal habit from within this scholarly tradition, as opposed to being another

instance proper of the application of this hereditary interpretative formula. Indeed, Mourelatos is, to the best of my knowledge, the only commentator who refers to an 'underlying unity' without taking it to be a *substance* or to be *transcendent* of the opposites. Instead, perhaps we should read Mourelatos as holding an *immanent* view, given that he argues that for Heraclitus the 'unity' or 'harmony' between the opposites is in fact internal to them. This notion of the unity of opposites as being an internal relation provides a solution to Dilcher's third problem in the sense that it avoids the hereditary transcendent reading that he wishes to expel from the tradition.

However, Mourelatos' attitude to the Immanent/Transcendent distinction may not be as simple and clear cut as the reconstruction presented above. I had an opportunity to ask him about how he would characterize his position in terms of this distinction. He responded that although he had not considered this question his inclination would be to accept both sides of this distinction as being applicable to the unity of opposites.⁵³ The rationale for this position seems to be that we cannot separate the oppositeness of a pair from their unity through being determinates of the same determinable, they form what Mourelatos referred to as a triad.⁵⁴ The reason why this distinction becomes unhelpful, in the case of what I have called the *hypotactic* metaphysics that Heraclitus puts forward, is because the entities involved here are not *mere things* in the sense of the character-powers of the NMT, that is, they have the capacity to combine in ways that are non-numerical. As such, the broad distinction between the immanent and transcendent interpretations of the unity of opposites that is spelt out in terms of a numerical count of the entities involved cannot take account of the way in which entities may combine in a hypotactic manner. For example, the opposites hot and cold are both kinds of temperature and are unified in virtue of this, but temperature is not another *mere thing* that something that is hot or cold has in addition to being hot or cold. That is, it is not a third 'thing' apart from the hot and the cold, because it is present in each of them. On the other

⁵³ "Frankly, I've not thought about that. My inclination would be to say both! That is, you've got hot and cold and the unified concept is something like temperature; but you can't make sense of hot and cold without also understanding the field, or the matrix, or the genus, if you want to call it that, of temperature. Likewise, up and down; matrix, genus: altitude or height. Then I think we are getting to the business of the Markedness but that's okay; 'altitude', of course, already means 'height'. I don't know how to respond to this because I want them both" (Telephone conversation, 2014).

⁵⁴ "I think that's a triad. The hot is a kind of temperature and the cold is a kind of temperature, the way in which red is a kind of colour and hot is a determination of temperature just as the determinate red is under the determinable colour" (Telephone conversation, 2014).

hand, and conversely, it is also not the case that the hot and the cold are *mere things*. As such, they are not just two simple ‘things’ by themselves, rather, they contain a complex of components, for example, they both contain temperature and are its kinds for this reason.

§2 Markedness in Heraclitus: Mourelatos’ ‘leaning’, and Dilcher’s ‘vicious circle’

Apart from the three problems that we have discussed in the previous section, which Dilcher poses for anyone who wishes to claim that Heraclitus held a principle of the Unity of Opposites, there is a fourth problem that he mentions in his 1995 book but not in his 2013 paper, given that he takes himself to have solved it through his dialectical interpretation of Heraclitus. He calls this problem the “vicious circle”. This is a problem that he considers to be prior to the others, given that he says that the use of the interpretative formula of the Unity of Opposites was intended to counter it (Dilcher, 1995, p. 103). In this section I will show that, rather than being a problem as such, this fourth concern is instead the appearance of another aspect of Heraclitus’ doctrine, which is to be understood better in relation to Heraclitus’ revolution against naïve paratactic metaphysics, in particular, in terms of his introduction of *hypotactic structure* in his own metaphysics.

First, it will be beneficial to take account of the problem as Dilcher sees it. I shall begin, as he does, with some analysis of fragment 90. My own initial analysis draws on the relevant parts of linguistic theory relating to antonymy. Fragment 90 is translated by Mourelatos thus:

All things are an exchange for fire and fire for all things, as goods for gold and gold for goods.
(Mourelatos, 2008, p. 321)

In this fragment the opposition between ‘fire’ and ‘all things’ is explained in terms of another more familiar opposition between ‘gold’ and ‘goods’ (in the economic sense; ‘products’ or ‘wares’). This is an instance of a common semantic phenomenon that the linguist Steven Jones calls *ancillary antonymy*, which is when one commonly known or accepted antonymous relationship (the ‘A-pair’) signals and supports, or generates, contrast in another (the ‘B-pair’), which may or may not already be

opposed (Jones, 2002, pp. 45f). On this account, we may say that the specific contrast between ‘fire’ and ‘all things’ is generated by an explicit *parallelism* set up between the two clauses; they are arranged in a similar fashion syntactically, i.e., ‘X for Y and Y for X’, while an explicit reference to their parallel meanings is given by a marker of simile, “as” (ὡς), which directs us to take the relationship between the terms of the first clause (the B-pair), to be explained by the more obviously antonymous relationship between the terms of the second clause (the A-pair). This is also supported by a parallel use of alliteration in the terms of each clause; the terms of first clause alliterate through beginning with ‘π-’ (πάντα, πῦρ), while the terms of the second clause alliterate through beginning with ‘χρ-’ (χρήματα, χρυσός). From his work in corpus linguistics, Jones informs us that in most of the instances of ancillary antonymy in his English corpus the terms follow the patterns ABAB or BABA. However, he notes that a minority follow another kind of pattern, where the A and B pairs are detached from each other and are contained within separate clauses (i.e., in the pattern AABB or BBAA), which he calls *A-pair/B-pair detachment* (Jones, 2002, p. 59). This is the kind of pattern that is involved in fragment 90 above.⁵⁵

However, Dilcher points out that there is an ambiguity as to whether fire is to be taken as part of the totality of all things (i.e., as one thing preeminent among many), or as something separate from it that comprehends both sides of this duality. Indeed, this ambiguity is reinforced by the parallel relationship between gold and goods, which contains a similar ambiguity, given that, on the one hand, gold is not only different from the goods that it is used to purchase but rather something of a common measure for any such purchasable goods; but, on the other hand, gold may itself also be considered to be a good, in virtue of being the most valuable of metals, which can itself be purchased. Dilcher refers to this ambiguity in the term ‘fire’ as a “vicious circle” (Dilcher, 1995, p. 102). He tells us that we should not here assume “conceptual unclarity” on Heraclitus’ part, neither should it be explained away, as he censures Kirk for doing, as being a “slight difficulty [...] due to an unavoidable

⁵⁵ Strictly speaking, the pattern of the terms in fragment 90 is BBBBAAAA, given that each term is mentioned twice; a reciprocal pattern of exchange is laid out between each of the two terms of each pair. For the purpose of analysis of the *ancillary antonymy* contained in the fragment, this should nonetheless be regarded as *detachment*.

looseness of speech” (Kirk, 1954, p. 348);⁵⁶ instead, it “concerns the very foundation of Heraclitus’ thought, the unity of all things” (Dilcher, 1995, p. 103).

Dilcher tells us that this “same inherent ambiguity keeps recurring whenever Heraclitus formulates what sounds like a principle of unity” (Dilcher, 1995, p. 103). He notes a few of the dualities involved: life/death, war/peace, just/unjust. Dilcher explains that there is a relationship between all of these terms within Heraclitus’ philosophy; in some fragments the terms appear in opposition to each other, while in others the first term of each duality is presented as the “proper designation for the whole” (Dilcher, 1995, p. 103). The dialectical movement that he briefly presents goes something like this: The unified life-process of everliving fire, standing in the place of the ‘one’, can also be looked at in terms of a *War* between ‘life’ and ‘death’, but ‘war’ also appears contrasted to ‘peace’ as one of the dualities in which the *God* manifests itself. However, *God* is not in an absolute position either, because of a dependence on *War* as a constituting principle; whereas *God* is a unifying principle in that it comprehends the unity, for example, between *just* and *unjust*, as being plainly good and *Just*. Thus, according to Dilcher, there seems to be a circular dialectical movement within the fragments (Dilcher, 1995, p. 103). He explains this movement thus:

“The recurrence of precisely the same confusing structure cannot be accidental. None of the central notions which account for unity is devoid of a fatal ambiguity. All of them are conceived both in opposition to their respective counterpart and as something comprehending both opposites. There is no “third term” which reasonably comprehends and resolves the previous opposition – and if we construct one, it will again fall into the same pattern.” (Dilcher, 1995, p. 103)

In response to Dilcher, I claim that what is pointed at by these examples in the fragments is a common structural property of antonymy and indeed language in general, which is known in linguistics as *Markedness*. In the case of an antonymy featuring markedness, usually one term is *marked* while the other is *unmarked*; in some cases this may mean that a specific mark is present in the marked member of an antonymy, while the unmarked member lacks this mark.

⁵⁶ Quoted similarly by Dilcher. It seems likely that this is an artifact of Kirk’s partial examination of the fragments, which looked only at those conceivable as being related to cosmology, for he says in the same sentence: “We know so little about Heraclitus’ views on any except large-scale cosmological changes that we cannot properly elucidate this difficulty [...]” (Kirk, 1954, p. 348).

According to the linguist John Lyons, markedness may be formal and morphological, distributive, or semantic, with some overlap between these categories (Lyons, 1977, pp. 305f). The particular facet of markedness that is of interest to us here is that of *Neutralisation*. This is a semantic property of markedness that should be familiar to most competent speakers of a language, whereby the unmarked term of an antonymy can be used to designate an entire semantic dimension; for example, when the words 'man' or 'men' are used in a generic sense to refer to the entire human species, i.e., neutralising the semantic contrast of man/woman. Lyons gives the examples: "*It is man that is responsible for environmental pollution*" and "*Men have lived on this island for ten thousand years*".⁵⁷ However, he says, it is not acceptable usage to refer to a group containing at least one woman as 'men', or to refer to a woman as a 'female man', which is a contradiction; i.e., 'man' is not, in these kinds of cases superordinate to 'woman' (Lyons, 1977, p. 309). Other examples feature terms that are completely unmarked with respect to their opposite, such as 'dog' and 'lion' used to refer to a particular animal, which might be either male or female; the oppositions dog/bitch and lion/lioness are *neutralised* in the terms 'dog' and 'lion'. One way to judge the marked/unmarked distinction in this context is that it is acceptable usage to say 'female dog' or 'female lion', but not 'male bitch' or 'male lioness', which are contradictions; 'female bitch' and 'female lioness' being tautologies (Lyons, 1977, p. 307). 'Lion' and 'lioness' are also good examples of formal or morphological markedness, given that the unmarked term 'lion' lacks the '-ess' mark, while the term 'lioness' is marked in this way. The linguist Alan Cruse describes the neutralising unmarked term as a "co-lexemic superordinate", given that the neutralised term 'dog' is a superordinate (or 'hyperonym') of the terms 'dog' and 'bitch', which are co-hyponyms, i.e., both 'bitch' and its opposite 'dog' are kinds of 'dog' (Cruse, 1986, p. 256).

Markedness neutralisation is also present in the examples of unifying terms that Dilcher points to in the fragments of Heraclitus. We can see that neutralisation is present in the term 'fire' in fragment 90, given that in one context 'fire' can have the specific phenomenal meaning of being one thing among many (or as opposed to many others), while in the other having the neutralised meaning of a comprehensive unity of fire and non-fire (Dilcher, 1995, p. 102). Thus, we can see that this

⁵⁷ Italics in original.

'ambiguity' involved in the term 'fire', which Dilcher called a "vicious circle", can be resolved if described semantically in terms of markedness neutralisation. A similar account can be given in the other cases that he mentions also.

At the end of the section on Heraclitus in his article (2008 [1973]), Mourelatos briefly touches on the phenomenon of markedness in Heraclitus' opposites, which he calls the "leaning" of oppositions. He points out that for Heraclitus "one of the opposed terms is often closer to the term expressing the encompassing unity than the other" (Mourelatos, 2008, p. 323). Mourelatos' position is accurate in that he recognises that this "leaning is not a peculiarity of Heraclitus' thought" (Mourelatos, 2008, p. 323). He explains further:

In schemes of opposites that do not involve the Heraclitean doctrine of unity, the same compromise of equality can be detected insofar as the two sides are given positive and negative associations respectively. (Mourelatos, 2008, p. 323)

Given this, he concludes that "The leaning in Heraclitus is a residual feature from older schemes of opposites which otherwise conform to the structure of NMT" (Mourelatos, 2008, p. 324). However, what Mourelatos apparently did not recognise (at that time) was that this 'leaning' of oppositions is something that has been studied for some time in linguistics and semiotics but under a different name, that of *Markedness*.⁵⁸ Although he is correct that it is not something peculiar to Heraclitus' thought, he then infers from this that it is a residual feature that has been inherited from previous schemes of opposites. However, Mourelatos did not inquire into the origins of these older schemes of opposites and, while his answer may have been historically accurate, he did not consider whether this 'leaning' may be a ubiquitous phenomenon of the language or of language in general.

⁵⁸ Mourelatos confirmed this in a telephone conversation that I had with him; he said the following: "The concept of Markedness in [the question I, Begley, asked], that is indeed terrific. I did think about that, not at the time I wrote the 'naïve metaphysics', but much later when I was interested in issues of philosophical linguistics; and yes, both, the concept of Markedness is relevant apropos of this 'leaning' in the case of opposites, but I think it's very very pervasive in language, but also something that I became aware of since we started using computers, it's the concept of default [...] So, I think this, long ago, the same trick was done in language by our very very very remote ancestors." What he meant by 'default' here is that, in a binary opposition, the unmarked term can also be used as a default term that stands for the matrix concept or genus, and that this has certain advantages in terms of the simplicity and parsimony of coding in a language. One of the examples he gave was that of 'Man', 'Woman', and 'Human'. Instead of using the terms 'human male', and 'human female', we can use 'Man' to refer in some instances to the former, and in some to the genus 'human' (Telephone conversation, 2014).

Markedness is a feature of language that is closely related to opposition and, as such, it is more likely that the ‘leaning’ of the Heraclitean opposites is due in some manner to this being a property of language in general, and of antonymy in particular. It is an interesting question whether Heraclitus was aware of something like this ‘leaning’ and was philosophically concerned with it, or whether it merely appears and functions in the text as a matter of course. I am inclined toward the former of these suggestions and, as such, I propose that a proper extension of Mourelatos’ notion, of the Heraclitean move away from a naïve paratactic metaphysics of mere things, should include an account of how the recognition of *Markedness* also functions in this spirit; i.e., how it is employed to bring about the genesis of a *hypotactic metaphysics*, a metaphysics of hierarchies and dependencies, a metaphysics with a structure that would be more similar to that found in later metaphysical thought.⁵⁹ This is a notion of metaphysics that is embodied by Mourelatos’ notion of a *logos-textured* world, and is also implied by Moravcsik’s *attributive* or *ordering-structuring* model of explanation, which we considered in Chapter 2. Moravcsik explicitly states the importance of hierarchical organisation for Heraclitus’ new metaphysics when he says that the latter “posits a hierarchical structure of units and wholes, and thus undermines the common sense notion that elements of reality that we can perceive are merely separate scattered bits of matter” (Moravcsik, 1989, p. 265; cf. 1991, p. 562). Following the theories of these two scholars, I do not wish to attempt to claim for Heraclitus a kind of theory that is only properly realised later by Plato and Aristotle; rather, I wish to show that the genesis of the move from *parataxis* to *hypotaxis* is what is to be found in Heraclitus.

Both Mourelatos and Dilcher have encountered this same pattern of *markedness* in the fragments, each in their own way and, it seems, independently of one another.⁶⁰ Both of these scholars recognise the same pattern but each interprets it differently, and in relation to their overall framework. Mourelatos seems to treat ‘leaning’ as being in conflict with the equality of the opposites that is otherwise displayed. As such, I suggest that the ‘leaning’ of opposites should be regarded as being in conflict with the second postulate of the NMT, that of ‘equality of status and

⁵⁹ When I spoke with Mourelatos about this, he seemed to be in complete agreement with this endeavour and associated my notion of *hypotactic* metaphysics with his notion of a *logos-textured* world: “I think that’s what I had in mind in speaking of a *logos-textured* world [...] because I think what emerges out of this business is indeed hierarchical organisation of concepts” (Telephone conversation, 2014).

⁶⁰ Cf. Dilcher, 1995, pp. 102–3; and Mourelatos, 2008, p. 323. See excerpts below.

independence', despite Mourelatos not stating this explicitly (cf. Mourelatos, 2008, p. 323). As we saw in Chapter 2, the 'independence' clause of this postulate had been rejected, along with the first postulate of 'thinghood', due to the recognition by Heraclitus of the internal relation between opposites. The 'leaning' of opposites weakens the 'equality of status' component of the second postulate. That is, although the opposites are equal in terms of their opposition to each other and, perhaps, their phenomenal appearance in the world, they are not equally disposed in relation to their superordinate matrix or genus.

Dilcher, on the other hand, sees the presence of this very same pattern as being an "inherent ambiguity" in all of Heraclitus' formulations of a principle of unity. He says that this ambiguity is a perceived problem, or a "vicious circle", in Heraclitus' notion of unity that the interpretative notion of 'unity-of-opposites' was intended to solve, but which Dilcher argues fails to do so. Instead, he claims that the pattern should be viewed as being connected with the inherent vitality of the dialectical structure of the *logos*.

As such, while Mourelatos takes 'leaning' to be an accident of the tradition of the use of opposites, Dilcher takes it as being an ambiguity that Heraclitus treats as being philosophically important. What I will now show is that although Dilcher is correct that the pattern is philosophically important, it is so for the reasons that Mourelatos has suggested rather than his own. It is quite striking that both Mourelatos and Dilcher refer to many of the very same fragments and Heraclitean terms to make their cases. Specifically, the fragments 30, 53, 67, 80, 90, and 102, are treated of in common. This can be seen immediately from a comparison of the following two quotations from Mourelatos and Dilcher, respectively:

Thus while there is a master opposition of fire against all things (B90, B31), it is also true that the world is essentially fire (B30). Similarly, the opposition of "just" versus "unjust" is resolved by God not in something neutral but in "just" things (B102); God is both war and peace (B67), yet primarily war (B53, B80); mortals and immortals are a unity (B62), presumably as immortals. In other words, the equality of the opposites is being compromised. One of the opposites is somehow privileged, closer to the ultimate reality. (Mourelatos, 2008, p. 323)

The same inherent ambiguity keeps recurring whenever Heraclitus formulates what sounds like a principle of unity. From everliving fire we have deduced "life" to be the key term for all more specific phenomena in microcosm and macrocosm. Yet if we try to fix it – how could it

be defined? As an interplay of living and dying, so it seems. Are these, then, two equipollent powers engaged in perennial struggle? Or is the “life-process” of the whole organism produced by their struggle? As both answers must be correct, we again face the same pattern. The term “life” appears in unmitigated opposition to death (B 88 etc.) and again as the proper designation for the whole (B 30; 32). If we now proceed and take this struggle as the basic and unifying term, we are referred to B 53 and B 80 which indeed present War and Strife in supreme position. Yet, war recurs in B 67 side by side with peace on an equal level – as one opposition in which god manifests himself. And to make the circle perfect, the gods in turn are in no absolute position because they depend on war as their constituting principle. In B 102 finally, the just is opposed to the unjust in the view of men while for god everything is not neutral or something comprehending both, but plainly good. (Dilcher, 1995, p. 103)

The crucial difference to notice here is that while Mourelatos associates the various instances to the extent that they all follow the same pattern of ‘leaning’, Dilcher connects them to each other in a cycle and avoids abstracting from them to a general explanatory pattern. What Mourelatos sees as a ‘privilege’ of a particular opposite, or its relative proximity to ultimate reality, is for Dilcher just another step in the dialectical process, no point of which occupies a privileged or absolute position, given that it is also always opposed on an equal level to its opposite.

However, Dilcher’s mistake here is in his reliance on ambiguity, and his failure to distinguish the different levels, or contexts, at which the terms involved are conceived. Take, as a particularly clear example, fragment 102, in which he fails to distinguish the two different uses of ‘just’. The ‘just’ *in the view of men* is opposed to the ‘unjust’, while *for god* everything is plainly ‘just’. Dilcher is here treating these two uses of ‘just’ as being the same, and thereby as being “ambiguous”. Notice especially that he says that the second usage is not a “neutral” usage or “something comprehending both”. We should, of course, agree that the ‘just’ for the god is not something *neutral* between the just and the unjust. However, being neutral is not the same as being something *comprehending both* the just and the unjust.

I had a brief opportunity to speak with Dilcher about this very issue during his visit to Dublin in 2013. He was initially in disagreement with a suggestion that I made regarding the presence of markedness here, because I had used the technical term ‘*neutralisation*’. However (I explained), this technical linguistic term is not intended to refer to the status of a neutral term on a continuum between two poles, rather, it is to refer to a usage of a term in which *the opposition* with its antonym has been neutralised. That is, such a term does indeed ‘comprehend both’ in the sense of

standing for the superordinate matrix or genus. What is even more bizarre about Dilcher's account here is that, in the following paragraph, a mere four lines after his denial that the use of 'just' should be considered as "comprehending both", he says the following: "None of the central notions which account for unity is devoid of a fatal ambiguity. All of them are conceived both in opposition to their respective counterpart and as something comprehending both opposites" (Dilcher, 1995, p. 103).⁶¹ This I take, and, I think, not unfairly, to be in direct contradiction with his earlier statement.⁶²

As such, I think that Dilcher's reliance on a claim of 'ambiguity' is unnecessary given that we can construct an alternate conception of the pattern in question in terms of markedness neutralisation.⁶³ Markedness neutralisation is not a case of ambiguity, and it does not necessarily imply ambiguity; rather, the distinction, between the sense of the unmarked usage and the sense of the superordinate usage, is a principled one that can often be easily spotted by the use of syntax and the context of use. In the cases of 'fire' and 'gold' in fragment 90, for example, we do indeed have a single term that can be taken in two ways, but this is not an ambiguity *per se*; that is, it is not a case like that of saying that one is going to the bank and ending up beside a river (where 'bank' can mean a financial institution or a riverbank). Rather, in the cases of 'fire' and 'gold' in fragment 90, any so-called 'ambiguity' is due in part to the close relation of superordination/subordination between the two possible meanings, which we then *distinguish* in manner similar to the way that Dilcher has suggested we should do. That is, we are not, in the case of fragment 90, expected to resolve any ambiguity, i.e., to decide between two readings of the one term, rather, in order to grasp the meaning of the fragment we are supposed to distinguish them and realise their internal relationship to each other. These considerations, coupled with the appearance of some measure of inconsistency in Dilcher's position, should steer us away from accepting his view. Instead, we

⁶¹ I have quoted this paragraph in full earlier in this section.

⁶² I am reminded here of Malcolm Schofield's criticism of Dilcher, to be found in his review of the latter's book: "He shows himself a promising and assured philologist; and while I disagree on many points of interpretation, large and small, D. seems to me to have got inside Heraclitus' skin. He wages a good deal of spirited polemic—*more Heracliteo*—against the error, confusion, and failures in perception of other scholars. His own weakest point is a tendency (you might think this too a vice picked up from Heraclitus) to assert and deny the same thing, sometimes on successive pages" (Schofield, 1997, p. 74). The instance I refer to here, however, is on the very same page, albeit in successive paragraphs.

⁶³ Dilcher relies on appeal to ambiguity in other cases also, for example, in fragment 60 (the road), which we discussed in Chapters 1 and 2.

should turn to Mourelatos' framework of interpretation and regard the pattern in question in terms of how the recognition of markedness neutralisation helps to introduce *hypotaxis*, hierarchical structure, into Heraclitus' metaphysics.

It should come as no surprise to us that Heraclitus would have been theoretically concerned with the phenomenon of markedness. Heraclitus was certainly a highly linguistically gifted writer, judging by his many plays on words, puns both homophonic and homographic, rhyme, alliteration, etc., and, if Serge Mouraviev is to be believed, palindromic and other sequences in the orthography of the fragments (Mouraviev, 1996). As such, it would be highly implausible to deny that Heraclitus was aware of the phenomenon of markedness, and it would be difficult to accept that he would not employ in his writings such a kind of semantic connection if he was aware of it, that is, considering the multitude of other kinds of semantic connection that he employs.

Fortunately, we have the benefit of a number of in-depth modern studies on markedness to draw on, which plainly show the connection between this phenomenon and those of antonymy and hierarchical organisation. For example, in his work *Markedness: The Evaluative Superstructure of Language*, from 1990, Edwin L. Battistella informs us that:

The hierarchical organization of concepts is a well-known principle of structure. But in addition to superordination or subordination of features, hierarchy also characterises the relation between the terms of an opposition. Hierarchy is reflected in the dominance of more general terms over less general, and we can view markedness as a hierarchization of opposites. The concepts of markedness, opposition, and hierarchy are thus intrinsically linked. Opposition imposes a symmetry or equivalence upon language: within a minimal paradigm two signs are defined by the presence versus the absence of a property. Hierarchy is an evaluative component that organizes related categories. Markedness is the projection of hierarchy onto the equivalence implied by opposition, extending the nonequivalence principle of a ranked taxonomy to the minimal oppositions that make up the quanta of language. (Battistella, 1990, p. 21)

Apart from the general consonance of this passage with what I have been suggesting so far, we should pay particular attention to the description of markedness as a "projection of hierarchy onto the equivalence implied by opposition". This is quite similar to Mourelatos' account of the case of the 'leaning' of the opposites in Heraclitus, which, we should remember, was originally arrived at by him

independently of any theoretical notion of markedness. That is, the 'leaning' of a pair of opposites in Heraclitus reveals their hierarchical organisation in relation to their common superordinate, in the sense that one member of the pair can stand for the unified matrix or genus in certain contexts. The important point that I wish to draw attention to here is that Heraclitus, being aware of the phenomenon of markedness in language, sought to draw out the hierarchical structure that it implies and to apply this understanding in his theory of the *hypotactic* order and structure of the things in the world, thereby helping to dispel the naïve paratactic notion of how things relate to each other. Thus, by way of the phenomenon of markedness, Heraclitus was drawing out an important element of what he saw as being, a '*logos*-textured' world. That is, as Mourelatos informs us, Heraclitus realised that language, far from being merely a dispensable convenience, is the medium through which we must take an indirect route in order to articulate the ontological structure of the world (Mourelatos, 2008, p. 299).

In light of the considerations presented above, it can be seen that what the *logos* is for Heraclitus involves a system of hypotactic organisation. This characterisation contributes somewhat towards an adequate understanding of what the *logos* is for Heraclitus, but we must still consider what the ontological status of the *logos* is. This is the question that I will address in the following section.

§3 The status of the Logos

It is notable that Dilcher's and Mourelatos' interpretations seem to be quite close to each other regarding what the *logos* is for Heraclitus, to the extent that both of them describe it as being both 'subjective' and 'objective', or as having both these aspects. Mourelatos explains in a footnote that the 'harmony of conceptual connections' is both 'subjective' and 'objective':

Conceptual connections are in a sense objective (they are valid for all minds), in a sense subjective (they can be articulated only insofar as minds respond to the world). So in the suggestion made here we have the appropriately middle solution to the much-mooted question (see Kirk, "Men and Opposites in Heraclitus," *MH*, 14 [1957], 155–59), whether the

Heraclitean coincidence of opposites is a doctrine about the world in itself or about the reactions of human or animate observers and assessors. (Mourelatos, 2008, p. 319: n. 46)⁶⁴

Mourelatos later identifies this 'harmony of conceptual connections' with the *logos*:

It is wonderfully appropriate that Heraclitus should have chosen the term *logos* for his insight, and that he should have used that term to refer both to something subjective, his discourse, and to something objective, the law and measure of the universe. (Mourelatos, 2008, p. 322)

It should be noted here that there is a slight slippage of meaning between these two statements. This is more apparent regarding the meaning of the 'objective' aspect than it is for that of 'subjective' aspect. 'Objective' in the first quotation is specified as meaning "valid for all minds". However, later, when referring to the *logos* he characterizes the reference of 'objective' as being "the law and measure of the universe". The first considers objectivity in terms of its relation to minds, while the second considers objectivity independently of minds, that is, in a more realist manner. I had an opportunity to ask Mourelatos about this issue, but he was unable to provide any further clarification at that time, and suggested that I might take the matter up myself.⁶⁵ I will return to this matter again later in this section.

Similarly to Mourelatos' interpretation expressed above, Dilcher also gives us an interpretation of what the *logos* is, in which he claims that it is both 'subjective' and 'objective':

[...] it is peculiar to the concept of λόγος to comprise subjective and objective aspects. One could say that the λόγος holds an intermediate position between the speaker and the things. Belonging to both, it unites them, as the disclosing realisation of the matter in speech. It is the mediating power that speaks out what is the case. The λόγος is the rational account which is uttered, it thus comprehends both the "subjective" activity and the "objective" result. (Dilcher, 1995, p. 37)

Dilcher later reinforces and clarifies this notion of *logos* when he says that:

⁶⁴ Square brackets in original.

⁶⁵ When I pointed this out to Mourelatos, he recognised the issue and responded in the following way: "this 'valid for all minds' is Kantian language; 'the law and measure of the universe' is language of somebody much more of a realist [...] I may not have put it clearly or well enough. So, feel free to fix it or to quarrel with it. [...] I would need to be much more in touch with my thought [all those years ago], almost a lifetime" (Telephone conversation, 2014).

[...] in what I have called the “intermediate position” of the λόγος between the speaker and the things, there is an essential unity of the subjective and the objective aspects of what a λόγος is and does. (Dilcher, 1995, p. 44)

What Dilcher means by the ‘subjective’ aspect here is “the reasoning inherent in giving a λόγος” (an account) and, by the ‘objective’ aspect, the “rational content [...], the “sense” and reason pointed out” (Dilcher, 1995, p. 44). Dilcher warns that “if the λόγος also comprises the object of reflection it does so in a functional sense [...] by virtue of being the content of the discourse” (Dilcher, 1995, p. 44). This is in contrast to other interpretations, for example, the one that was put forward by Kahn, which employs a yet more objective reading of *logos*: “The *logos* can be his ‘meaning’ only in the objective sense: the structure which his words intend or point at, which is the structure of the world itself (and not the intensional structure of his *thought* about the world)” (Kahn, 1979, p. 98). The interpretations put forward by both Mourelatos and Dilcher are in conflict with Kahn’s position on this matter, given that what they refer to as the objective aspect would seem to encompass something like intensional structure, i.e, universally valid ‘conceptual connections’ (Mourelatos), and ‘rational content’ or ‘sense’ (Dilcher); whereas for Kahn the objectivity of the *logos* consists in its being “the structure of the world itself”, and hence quite independently of our concepts, reasoning and senses involved.

Dilcher argues that it is a mistake to take ‘*logos*’ in the traditional sense of referring to a strongly objective “world law” or cosmic principle, a view that he regards as stemming from Stoic philosophy and subsequently being imposed upon the doxography regarding Heraclitus. Dilcher points out that, on such a reading, “Since the *logos* is primarily conceived as being inherent in the things and outside of human speech, it must be made the object of the explanation” (Dilcher, 1995, p. 30). He argues that this would lead to a certain doubling of the *logos*, and would “be a sign of confused thinking”, whereby the account of Heraclitus would as such be “a *logos* about the *logos*” (Dilcher, 1995, p. 30). Through a comprehensive exposition of the meaning and evolution of the ancient Greek term λόγος, Dilcher shows that what had been mistaken for a cosmic principle by many interpreters, is instead to be explained as being “simply the richness and peculiarity of the Greek concept of λόγος” (Dilcher, 1995, p. 44). He compares Heraclitus’ specialised philosophical utilisation of this ordinary term to Plato’s utilisation of the word ‘idea’ in his philosophy; in the sense that Plato’s peculiar use of the word would not have been grasped by a contemporary

reader until they became more familiar with the import of his philosophical thought (Dilcher, 1995, p. 40).⁶⁶

It is no mere coincidence that Dilcher and Mourelatos hold similar interpretations of the *logos* or, at least, speak of it in similar terms. Rather, they both seem to have derived their interpretations of it, in part, through reacting to a 1966 article by Willem Jacob Verdenius. However, it becomes evident when studying these reactions that, while both Dilcher and Mourelatos have retained the distinction between ‘subjective’ and ‘objective’ for their descriptions of the *logos*, each of them now use it in their own manner.

Mourelatos found Verdenius to be making valid observations when he says that, for Heraclitus, the *logos* and *kosmos* are “in some sense equivalent”, and that “The objective world and thoughts of Heraclitus are two aspects of one and the same thing”.⁶⁷ However, he found Verdenius’ explanation of what he calls the ‘ambivalence’ of the *logos* to be “too strong”, when the latter explained that “This ambivalence is possible because in Heraclitus’ consciousness no sharp boundary existed between his thought and its object”,⁶⁸ given that “it smothers the Heraclitean insight under a doctrine (supposedly primitive) of subject-object fusion” (Mourelatos, 2008, pp. 322–3: n. 63). Verdenius makes the point that the ‘ambivalence’ of the *logos* in Heraclitus is paralleled by the tendency of Greek cognitive-psychological terms to display a similar ambivalence between ‘subjective’ and ‘objective’ senses, i.e., activity or faculty, and result or external reality, respectively. Although Mourelatos accepts this fact, he thinks that it is of little help when trying to understand Heraclitus because this tendency of cognitive-psychological terms is not peculiar to the Greek language alone, and he warns us that “What we need to understand is not the linguistic symptoms Heraclitus shares with many others but the nature and motivation of the diagnosis he offers” (Mourelatos, 2008, p. 323: n. 63).

Dilcher relies on this same linguistic point of Verdenius’ in his extended exposition of the word ‘*logos*’. Dilcher acknowledges that the ambivalence of these

⁶⁶ A similar point has been made more recently by Robinson: “the first hearers of the word *logos* in Heraclitus’ book would not have found anything strange about the word as such, though they might well have finished up puzzled about what Heraclitus did with it” (2013, p. 277).

⁶⁷ The German text that Mourelatos quotes from Verdenius’ article is: “*Logos und Kosmos sind also in gewissem Sinne äquivalent...*” (Verdenius, 1966, p. 91); “*Die objektive Welt und Heraklits Gedankenwelt sind zwei Aspekte einer und derselben Sache.*” (p. 92).

⁶⁸ Also quoted by Mourelatos from the German text: “*Diese Ambivalenz ist möglich, weil im Bewusstsein Heraklits keine scharfe Grenze bestand zwischen seinem Denken und dessen Gegenstand*” (Verdenius, 1966, p. 91).

types of terms is not peculiar to Greek, but, in contrast to Mourelatos, he expresses no difficulty with this. While he says that Verdenius' analysis of the ambivalence of these terms, into *activity* and *result*, is "to the point", he finds it to be slightly simplified:

In the case of λόγος, however, I think it wrong to put the activity first as the primary idea from which the various objectifications were derived. Λόγος is primarily the (internal) object or result of speaking and calculating, thus combining "subject" and "object" of speech. (Dilcher, 1995, p. 38: n. 45)

Dilcher is also critical of Verdenius when the latter says that: "[...] the Logos is both Heraclitus' own reasoning system and the objective system in the world."⁶⁹ Dilcher objects to this translation of *logos* as 'system', because it stresses "too much the material side, the specific content". Instead, he suggests that "the element of thought and reflection is equally, if not more important in Heraclitus." This is because, he thinks, Heraclitus wished to present a form of reasoning, rather than a truth in the traditional sense of '*logos*' (Dilcher, 1995, p. 45).

As we saw earlier, while outlining Dilcher's objection to the traditional interpretation of the *logos* as being a 'world law' or 'cosmic principle', the *logos* is not considered by him to be a 'thing' external to the account (*logos*) in which it is presented. He reiterates this point again later in the following manner:

Λόγος does not denote anything external to the present account and consideration. Otherwise, it would require another λόγος to explain it, - quite nonsensically, as I have argued before. So the *logos* is inherent in the things, - but not itself a "thing", or engaged in structuring things. (Dilcher, 1995, p. 44)⁷⁰

Thus, according to Dilcher, Heraclitus does not attempt to describe 'the *logos*' directly, qua object, because this would be a never-ending task, rather, he shows the inherent activity of the *logos* by 'speaking in agreement' with it. Although Dilcher does not make the theoretical relationship explicit, I think that something like this approach to the *logos* must be behind his view, which he briefly mentions later in his book when discussing Heraclitus' attitude to language, that "Heraclitus did not conceive of a philosophy of language, as a consideration in its own right which can be

⁶⁹ "[...] der Logos ist zugleich Heraklits eigenes Argumentationssystem und das objektive System Der Welt." (Verdenius, 1966, p. 93).

⁷⁰ For Dilcher's earlier argument see (Dilcher, 1995, p. 30).

undertaken in separation of what is being discussed in language” (Dilcher, 1995, p. 128). Mourelatos, I think, holds a view that is compatible with this view of Dilcher’s, at least in that they both recognise the difficulty of distinguishing between ontology and philosophy of language in Heraclitus. This view is connected with Mourelatos’ notion of a *logos-textured* world, in the sense that what he considers to be Heraclitus’ decisive contribution in this regard is the realisation that we must take a “detour” by way of language in order adequately to articulate the ontological structure of the world, rather than language being merely a dispensable convenience as it was within the scheme of the naïve metaphysics of things.⁷¹ Moravcsik may also have been expressing a similar view, albeit one that is more committed to the traditional ‘world law’ interpretation, when he wrote:

Is his point about sameness and difference, hot and cold, etc. a point of logic, or what he took to be a necessary truth about reality, or what we would call today a principle of physics? A modern philosopher today would probably say that the notion has to be analyzed in terms of a variety of concepts, some metaphysical, some logical, and some physical, and then the examples distributed among the various precise modern concepts. But while such a move may clarify, it could also destroy and distort. Heraclitus has a unitary vision of the laws of reality; perhaps we are unable today to recapture this kind of vision. (Moravcsik, 1991, p. 562)

I think that the insights regarding these matters presented above, especially by Dilcher and Mourelatos, are indeed close to the mark and show the inherent confusion of the strongly objective characterisations of the *logos* favoured in more traditional interpretations. Heraclitus’ exposition of the *logos* is contained in the manner in which he speaks about the world, as opposed to being a separate enquiry.

⁷¹ When I asked Mourelatos about what he considered the ontological status of the conceptual connections (and, consequently, the *logos*) to be, in particular, that of the relation of opposition, he responded that: “This is where we get into this area where it’s very very difficult to distinguish between ontology and epistemology or philosophy of language. In a way that whole paper, on the naïve metaphysics of things, [was intended to show that] Heraclitus is beginning to have a sense of a *logos-textured world*, that is, a universe that really inevitably we have to approach in terms that, in the first instance, can only be explained linguistically; that is, we say ‘What is a fact?’ ... ‘What is a fact?’, I mean there is no way I can point you to a fact in the world; I can say: well, a fact is what is present in the world that makes a proposition true. So, we take this detour by way of language in order to talk about such things. Something like that also applies to things like categories. So, my answer to [...] “What is the ontological status?”; I would say contrariety..., incompatibility...; but then I can hear you, very properly, protesting that these are linguistic conceptions. That’s, I think, because of this business of the world becoming *logos-textured*; the world seems structured in terms that we can articulate only indirectly by taking a detour by way of language” (Telephone conversation, 2014).

In order to make sense of Dilcher's claim regarding the *logos*, we should consider what the *logos* must be like in order to account for these properties; that is, that it is in some manner not external to the account and consideration, that it cannot be directly explained without 'doubling' itself or entailing its own activity and function, that it is inherent in the things but is not itself a thing (or, at least, we should add, not a thing like other 'things' that are spoken of). My own view is that this would make sense only if the *logos* involves something like language's capacity for signification, which cannot be directly explained without involving the use of this same capacity. This is something objective in the requisite sense of being common to, and valid for, all particular uses of language employed by language users (whether or not they recognise this), and that its function points out the 'sense' and 'reason' of the things that it is used to describe.

What is lacking or, at least, not sufficiently emphasised in Dilcher's account is the notion that the *logos* has a determinate structure of its own. I think that Mourelatos' view helps to supplement this account due to the emphasis that he puts on 'conceptual connections', the internal relations between elements of the *logos*, such as, the relation of opposition that we have been concerned with. Here we should also recall the result of our considerations from the previous section, i.e., that the *logos* must have a *hypotactic* structure in order to correspond to, and be inherent in, the structure of things in the world.

However, we should also reject the strongly objective or 'realistic' reading of the objective aspect of the *logos*, which Mourelatos seemed to propose, resulting from what I have referred to at the beginning of this section as a slippage of meaning between his two statements, when he refers to it in the second case as "the law and measure of the universe" (Mourelatos, 2008, p. 322). This characterisation of the objective aspect is, of course, ruled out by Dilcher's argument against such interpretations. Furthermore, I think that this characterisation is not consistent with the other elements of Mourelatos' interpretation. In particular, it conflicts with the notion that we explain the world indirectly, by way of a 'detour' through language. That is, if the *logos* is, in part, "the law and measure of the universe", i.e., the object of the account and the very thing to be explained, we cannot say that we take a 'detour' through it in order to explain it itself; that is, we cannot claim that we are capable of taking a 'detour' when our destination lies on the very same road, or even within our vehicle itself, so to speak.

Thus, I think that Mourelatos' characterisation of the *logos* as being the sum of conceptual connections that are "valid for all minds" is the preferable statement to adopt (Mourelatos, 2008, p. 319: n. 46), but only if it is not taken in a psychologistic sense of being universally valid *in virtue of* being valid for each and every mind, that is, the explanation must run in the other direction; the *logos* is valid for all minds precisely *because* it is universally valid and generally applicable. In view of the likelihood of the slippage of meaning in Mourelatos' view, to a more 'realistic' or 'world law' view, I think it is unlikely that he could have intended any psychologistic connotation by the characterisation "valid for all minds". The psychologistic reading is also specifically ruled out by Heraclitus when he says in fragment 2 that although the *logos* is common (i.e., universally applicable), the many live *as though* they had private understanding (*but they do not*).⁷² This reading of the fragment offers no opportunity for priority to be given to the private understandings of the many; in fact, it denies that they can really have such private understandings (or, at least, that is, whilst they are truly possessed of understanding).

From the above discussion we may conclude that the objective aspect of the *logos* is valid for all minds because it is also inherent in the things themselves. The *logos* "holds an intermediate position between the speaker and the things", "[b]elonging to both, it unites them" (Dilcher, 1995, p. 37). All things happen in accord with the *logos* because the objective aspect of it belongs to the things. The *logos* as such is not the law and measure of all things, instead it is what unites speakers with the proto-essence of what they are speaking of, and cannot itself be described directly for it is also, in its subjective aspect, the inherent vehicle by which a speaker grasps the things, and expresses what is the case.

We must then distinguish between the *logos* and what I called in Chapter 2 the *proto-essences* of the things. The *logos* is inherent in the proto-essences of the things but is not itself these proto-essences. This is due to the combined arguments presented above, by Dilcher and Mourelatos, that if the *logos* were itself an object of the subjective account, that is, a thing external to the account, then there would be no available mediating factor (through which to take a "detour") other than the *logos* itself, that is, we would require another *logos* for this purpose, and then this would

⁷² Cf. Robinson: "the many live, however, as though they had a private understanding" (1987, p. 11). Marcovich, using an extended notion of *phronesis*, translates "the many live as if they had a religious wisdom of their own" (1967, p. 91; cf. pp. 96–7 on this meaning of *phronesis*).

lead to a regress of *logoi*. Thus, although, as we discussed in Chapter 2, Heraclitus aims at giving an account of the proto-essences of the things and how they relate to each other, which is thus the object of his account, this is accomplished indirectly by way of the *logos* and his 'speaking in accord' with it. That is, the *logos* is what allows for the coherence of Heraclitus' account with the proto-essences of the things, and for it to have meaning, given that the *logos* belongs to both and unites them. The *logos* is what the speaker is in communion with in order to have the capacity and competence to express the 'what it is to be' of the things and the reasons for the necessity of their interactions, e.g., that two things are necessarily opposed and thereby also unified, etc. This is in contradistinction to the dispensability of language in the framework of the naïve metaphysics, for which the paradigm is that of direct acquaintance with physical objects in space, their mereological structure, and the contingent tendencies of their interactions.

PART 2: Duality and Opposition in Modern Philosophy of Language and Linguistics

In the first part of this thesis I focused on part of the early history of the study of opposition in philosophy, specifically Heraclitus' doctrine of the Unity of Opposites. I outlined and assessed the usage of what I see as being two of the main distinctions that are employed in the literature regarding the unity of opposites, and some of the debate surrounding these notions. I also showed how the framework of interpretation employed by Mourelatos and Moravcsik helps us to resolve a number of problems that were raised by Dilcher, and gives us a better insight into the unique contribution of Heraclitus to early Greek philosophy. This contribution represented a decisive move away from what Mourelatos interpreted as being a *naïve paratactic metaphysics of mere things*, towards what I called *hypotactic metaphysics*, which goes hand in hand with what Mourelatos called a conception of the world as being *logos-textured*.

What is of particular importance for my purposes is the role that the recognition of the unity of opposites played in this revolution, for it was the recognition that opposites must be internally or conceptually related to each other, and not externally and contingently so, which prompted the need to recognise and consider levels of reality beyond that of the *mere thinghood of character-powers*. This recognition also prompted a change in the philosophical attitude to language, in the sense that it was no longer clear that language was ultimately dispensable for investigations of the world. It no longer merely had the redundant role, of being a convenience, of reaching out to individual things in the world directly, pointing to them, or baptising them; rather, in Heraclitus' philosophy, it began to reveal a world that was *logos-textured* and that was conceptually articulated and structured.

In the second part of this thesis I shall turn to focus on part of the modern history of the study of opposition, predominantly in philosophy of language and linguistics, specifically the attempts to provide, as part of a theory of language, a semantic account of the sense relation of antonymy. It will be important to keep in mind the findings of the first part of this thesis, in particular those summarised above, while we consider how opposition has been treated of in this modern context. It is also important to ask what similarities, if any, can be discerned between the philosophical apprehensions of opposites, and opposition, of these two epochs. As

will become apparent in this part of the thesis, it is my own view that a certain parallel may be found both between the ancient naïve paratactic view of opposition that preceded Heraclitus and the modern extensionally based view of opposition, and the views suggested by Heraclitus and Katz, which attempt to move beyond the respective paratactic or extensional approaches of their predecessors and contemporaries. In both cases, it is in some measure the recognition and explanation of the phenomenon of opposition and the necessary entailments that are based upon it, which prompts the need for a *hypotactic* and hierarchical ordering of concepts. As we shall see, in Chapter 5, in the case of Katz' semantic theory, this will take the form of an intensional decompositional semantics.

The parallel that I see between the ancient naïve paratactic and the modern extensionally based approaches to opposition is that, in both cases, the approach is based primarily on reference to individual things in the world, or sets of such things. That is, broadly speaking, in both cases opposition is based merely upon the fact that sets of things tend to, or are stipulated to, exclude each other in the world. This basis, however, is not enough to ground necessary relations between opposites, or necessary entailments between propositions containing antonymous predicates. In the ancient naïve paratactic context, explanation of opposition is approached through direct reference to merely spatially arranged things described mereologically in terms of their component *character-powers*. In the modern extensionally based context, explanation of opposition is approached through the use of what are called '*meaning postulates*', which are universally quantified expressions given in a predicate calculus, which provide axioms that relate two predicates of a language and thus describe their logical properties in relation to each other. This notion will be explicated and assessed at length in the following two chapters. The point of comparison that should be borne in mind is that in this modern approach, similarly to the ancient naïve approach, only sets of individual things are referred to; opposites and oppositions are apprehended by reference to the mere tendencies (or stipulations) that the individual things of their extensions exclude each other (for example).

It will be beneficial to leave further exposition of this parallel until the end of Chapter 5, when we will be in a better position to examine side by side Heraclitus' and Katz' reactions to the naïve paratactic and extensional views of opposition summarised above. However, I will give a brief indication of what this parallel

consists in. In both the case of Heraclitus' hypotactic metaphysics and Katz' decompositional semantics, the approach is to grasp phenomena in terms of what could broadly be called their intensional structure. In the case of oppositional phenomena, both systems employ hierarchy in order to capture the basis of the necessary relations between opposites, that is, through the recognition of a unifying, or superordinate element, which is something that the approaches that they were each responding to lacked. What can be learnt from such a parallel, I think, is that just as Heraclitus realised that it was not possible, and thereby a mistake to attempt to explain the basis of oppositional phenomena merely on the basis of the tendencies of mere things without any account of the unity involved in opposition, we should realise, just as Katz did, that it is a mistake in the modern context to ignore explanations of opposition in terms of hierarchical intensional structures in favour of explanations that rely on the basis of sets of things excluding each other in the world.

CHAPTER 4: Contemporary Scientific Research into Antonymy

Abstract of Chapter 4

The aim of this chapter is to outline and discuss some of the contemporary research into antonymy and opposition, in linguistics and psychology, and to outline a number of particular problems: problems articulated in this research as well as problems arising, as I argue, from it. By and large, this chapter is descriptive, the aim being to set the scene for the more analytical and argumentative tasks, which, having emerged through the present chapter, will be addressed in the next, and final, chapter (Chapter 5).

I shall argue that, through their investigations, the linguists and others come up against the problem of the status of antonymy. I shall argue also that antonymy (semantic opposition) should not be defined in terms of logical opposition. By 'the problem of the status of antonymy' I mean the problem of both its metaphysical and its semantic status; and, as we shall see, I think these are closely linked and really can be thought of as amounting to a single complex problem.

In attending to the above, we shall be analysing linguistic research conducted into the semantics of antonymy in the latter part of the 20th century and early 21st century, including some work carried out in the field of psychology regarding the perception of opposition. Analysis and criticism of a particular example of the approach to defining the kinds of antonymy by way of *meaning postulates*, namely, that put forward by Ronnie Cann.

Introduction

The study of Duality in its many forms tends to raise the same or similar philosophical problems and questions about the nature of Duality. Perhaps the most important of these questions being that of what the ontological and epistemological status of Duality is; for example, 'Is there Duality in the world independent of the mind, or is it something that the mind imposes on the world to some degree?' However, this is only one example of such a question; the question can be framed in many ways with regard to a number of specific scientific disciplines. During this research project I have reviewed a large amount of literature regarding Duality in many disciplines, too much to cover adequately in this thesis. However, two in particular stand out for treatment due to the proximity of their investigations, both to each other and to the general philosophical problems regarding Duality. These are, broadly, linguistics and psychology; I will discuss the former in much more detail than the latter.

In the discipline of linguistics, Duality is most recognisably studied in the field of lexicology, specifically, the *lexical semantics of antonymy*. Lexical semantics is the study of the meanings of, and relations between, lexemes, which are abstract morphological units representing a set of forms taken by a single word. In simple terms, 'lexemes' are what are contained in a lexicon, like a dictionary or thesaurus; dictionaries do not contain a single entry for every word of a language, rather, words of similar root meaning are grouped together under a headword. Similarly, thesauri map a number of the prominent sense relations, such as synonymy and antonymy, etc. What is interesting about lexical semantics for my purposes is that it is a level of formal linguistic analysis at which our ordinary pre-theoretical notions about opposites in language are formalised. What I mean by this is that when we ask or answer a seemingly simple question such as 'What is the opposite of 'up'?', we employ an understanding of a metalinguistic term, that is, a term of a language that is used to refer to a part of that or another language. Everybody from a child who is just starting to learn their first language, to the formal linguist, has a certain mastery over this usage of this word 'opposite', whereas many other metalinguistic terms are not learnt by some of us until adolescence, if indeed ever; for example, terms like 'verb', 'noun', 'synonym', 'hyponym', or even the technical term for an opposite, an 'antonym'. It is significant that antonymy is a lexical semantic relation that we find to

be intuitive from an early age, which is borne-out by the empirical science of these matters, and moreover that we use a single non-technical term for this phenomenon.

Take, for example, the widely known game where someone invokes 'opposites day', that is, the game where we take the person speaking to mean the opposite of what they are saying, and then paradoxes ensue attended by much hilarity. However, what if I was to invoke instead 'meronym day', or maybe even 'co-lexemic superordinate day'? In this case, you may not be able to play the game that I am suggesting because, unless you have been in the habit of reading about linguistics recently, you may not understand what kind of game it is that I am talking about. I could perhaps explain it to you; a meronym is a word that refers to a part of something, so we might call it the 'part day' game. However, would we all necessarily be playing the same game in this case? After all, there would seem to be many ways in which you could construe someone to be talking about parts of the things that they are speaking about. Compare this situation with the ease with which you can pick-out the opposite of something, and how this opposite is usually considered to be canonical, in the sense that it is the word that most competent speakers of the language would suggest in the same context.

The current dominant paradigm of linguistic science, cognitive linguistics, treats of antonymy largely as being a product of cognitive (i.e., psychological) mechanisms. The problem with this method for my purposes is that it can give no indication of an (unbiased) answer to the question of whether antonymous relations correspond to real relations in the world or not. This, I feel, is also a problem for any other linguistic theory that does not posit a principled distinction between its semantic and pragmatic components. What I shall mean, for present purposes, by semantics is that level of a theory of language at which the properties and relations that underlie valid entailments are captured.

Certainly there are pragmatic effects that contribute to our use of antonymy in our utterances and, as such, a complete linguistic theory of antonymy should contain a pragmatic component. However, the fact that I can arbitrarily form an opposition between two word tokens, based on the use of pragmatic principles, is not capable of speaking to the reality of such an opposition existing between the things or concepts in question. My stock example, which I have often used to explain this, is the opposition that is formed between 'business' and 'pleasure', for example, when one is intending to cross a restricted international border and must fill-out an entry

questionnaire of some kind, on which it is specified that one can only tick one or the other of the two options. The fact that one might find one's business pleasurable or that pleasure is one's business is irrelevant to the question posed in the context, which by its nature sets up a dichotomous opposition both psychologically and legally, etc. It is not the case that merely being involved in a question on such a form should lead to us consider an opposition to be a constructed one, given that such forms may ask other questions like 'Are you, or have you ever been, a member of such and such a political party?' and providing options for 'yes' and 'no' answers; this does set up a real opposition, a standard logical one, between being the member of a certain group and not being a member of that group. Other questions might include, for example, options between being male or being female. Although this may well be a question about what it says on one's passport, rather than being a question about one's anatomy, it is still at least based on a semantic opposition and, that is, I wish to claim, a real one.

We will return to the question of the ontological and epistemological status of antonymy later in this chapter and in the next chapter, and will be in a better position to attempt to provide an answer to this question then. To reiterate the point that I have made above: although there are and should be pragmatic theories of antonymy, they will be largely unhelpful for answering the main philosophical questions regarding antonymy, as such, I shall rely on the principled distinction between semantics and pragmatics that was posited by Jerrold J. Katz. We will return to this distinction again in Chapter 5 when we discuss his theory.

§1.1 The metalinguistic term 'antonymy', and the importance of opposition in the study of natural language and psychology

'Antonymy' is the linguists' name for (primarily) a paradigmatic sense relation of opposition between two lexemes; that is, it is the relation between the meanings of signs that are substitutable for each other in a syntactic structure, and which are considered to be opposites. According to the linguist Steven Jones (2002, p. 9), the word 'antonymy' was originally coined in 1867 by C. J. Smith in the preface to his

thesaurus of *Synonyms and Antonyms*.⁷³ Smith characterises it using an analogy to the word ‘synonym’ or ‘synonymy’ (i.e., identity, or similarity between the meanings of words), and as a technical term for the sense relation between words that are ‘opposite’ to each other:

Words which agree in expressing one or more characteristic ideas in common he [the author] has regarded as Synonyms, those which negative one or more such ideas he has called Antonyms [sic]. (Smith, 1867, p. v : Preface).

This was a very loose description of the relation for lexicographical purposes, which is somewhat inaccurate and naive in the sense that it implies that pairs of antonyms are maximally opposed to, or separated from each other, through the association with being the opposite of synonyms, which are closely related to each other. Indeed, this is often how we conceive of opposites pre-theoretically, as being maximally opposed. John Lyons tells us that this has caused much confusion in semantics (Lyons, 1977, p. 286).

Although we seem to have an instinctive understanding of duality, what was known in some manner or other to Heraclitus and perhaps other ancient philosophers, and has been revealed by the formal analysis of duality in various modern fields, is that duality is always accompanied by unity. We ordinarily conceive of opposites as being radically opposed to each other and, as such, treat opposition as a relation of maximal difference between two entities. This is how our cognition of

⁷³ Contrary to what Jones reports, the word ‘antonymy’ does not appear in Smith’s book, rather, the word ‘antonym’ does. Although this may have been the first avowedly technical usage in English, in the context of lexicography, a simple *Google Ngram* search reveals earlier usages of the word ‘antonym’, possibly as far back as 1820 (I was unable to verify the exact source), but at least as early as 1860 in a manual for the instruction of fifth grade students in Milwaukee. Here we find ‘antonym’ used first in a rather apt piece of pedagogical advice: “The force of a word may frequently be better understood by reference to its opposite or antonym than by the use of a synonym” (*By-laws of the Board of Commissioners, Rules for the Government of the Schools, and Laws Relative to Common Schools in the City of Milwaukee*, 1860, p. 37).

The error and/or inaccuracy is now commonplace, and repeated often; the most recent example that I am aware of is from 2014 (Gao & Zheng, 2014, p. 234). The source of the error seems likely to be the introduction to *Webster’s New Dictionary of Synonyms* (1968), authored by Rose F. Egan (cf. Egan, 1984, p. 15a). That is, despite Egan being careful to point out later (p. 26a) that Smith, in his own words, “ventured, not to coin, but to reissue” (Smith, 1867, p. v). Smith does not mention any prior usage of the term, rather, his qualificatory remark seems to be due to a possible usage of the word ‘antonym’ in grammar to refer to a pronoun, and Smith sees little harm in repurposing this “Greek word” given that the Latin terms are already current in grammatical contexts (1867, pp. v–vi). There are earlier uses of similar terms in other languages, such as the French ‘antonymie’ or ‘contraire’, and the German ‘gegensatz’ or ‘gegenbegriff’.

the world seems to be organised, and it is useful for us to differentiate the world in this fashion. Indeed, it would be disastrous if we did not, as Douglas Adams pointed out in his own unique way, in *The Hitchhiker's Guide to the Galaxy*; for, after Man proved that God does not exist and God “promptly vanished in a puff of logic”, Man says ‘Oh, that was easy,’ “and for an encore goes on to prove that black is white and gets himself killed on the next zebra crossing” (Adams, 1979).

However, if we consider any pair of antonyms, for example, ‘hot’ and ‘cold’, it is clear upon careful inspection that we should not really consider them to be maximally different from each other semantically. They are both kinds of temperature, and share everything about their meaning in common with each other except along a single dimension, a scale on which they occupy opposite poles. This property of antonyms has been recognised, by linguists such as Alan Cruse, to hold a certain fascination for us, given that they are in fact both semantically close to, and distant from, each other. Cruse explains what he calls the ‘unique fascination’ of opposites thus:

Opposites possess a unique fascination, and exhibit properties which may appear paradoxical. Take, for instance, the simultaneous closeness, and distance from one another, of opposites. The meanings of a pair of opposites are felt intuitively to be maximally separated. Indeed, there is a widespread idea that the power of uniting or reconciling opposites is a magical one, an attribute of the Deity, or a property of states of mind brought about by profound meditation, and so on. The closeness of opposites, on the other hand, manifests itself, for instance, in the fact that the members of a pair have almost identical distributions, that is to say, very similar possibilities of normal and abnormal occurrence. It is also reflected in the frequency of speech errors in which the intended word is substituted by its opposite. (Cruse, 1986, p. 197)

Jones notes two examples of language acquisition that may also provide evidence of what Cruse calls our ‘unique fascination’ with antonymy. Firstly, he says that: “It has been widely documented that children tend to grasp the concept of oppositeness at a very early age, often learning antonyms in pairs rather than as single items.” Secondly, he says that: “we are drawn to ‘opposites’ when learning a new language and feel more comfortable with the precise meaning of a word in our native tongue if we are familiar with its corresponding antonym” (Jones, 2002, p. 3). These facets of our use of antonymy, that it appears in our speech errors, that it is prominent in children’s early acquisition of language, and in the learning of a second language or

the full comprehension of our native one, show that it is an important concept for the study of natural language, both in the field of linguistics, and pre-theoretically in everyday life. Further, Cruse also points to the importance of opposites throughout the history of philosophy, in the continuation of the above quotation regarding the 'unique fascination' of opposites:

Philosophers and others from Heraclitus to Jung have noted the tendency of things to slip into their opposite states; and many have remarked on the thin dividing line between love and hate, genius and madness, etc. The paradox of simultaneous difference and similarity is partly resolved by the fact that opposites typically differ along only one dimension of meaning: in respect of all other features they are identical, hence their semantic closeness; along the dimension of difference, they occupy opposing poles, hence the feeling of difference. (Cruse, 1986, p. 197)

In the first three chapters of this thesis I have attempted to draw out part of the relationship suggested here, between the modern linguistic theories of antonymy and the pre-Socratic philosophy of Heraclitus, in a more thorough and philosophically sensitive way than is attempted here by Cruse. I have argued that Heraclitus' doctrine of the Unity of Opposites is primarily an expression of his understanding of the relation of opposition, and that this is what we should understand the doctrine of the Unity of Opposites as being about. The analysis of antonymy in terms of semantic dimensions of difference and similarity is indeed recognisable in the work of modern commentators on Heraclitus, such as Kirk and Kahn who speak of 'dimensions' or 'continuums' between opposites, and is readily displayed in the Fragments of Heraclitus themselves, albeit in seemingly paradoxical language. For example, Heraclitus says in fragment 8 that "[...] what opposes unites [...]" (Robinson, 1987, p. 15: [D. 8]), and in fragment 51 that "[...] a thing agrees at variance with itself [...]" (Kahn, 1979, p. 65: LXXVIII [D. 51]).

In the linguistic treatment of antonymy a principle of unity-of-opposites appears, at least partially, in the form of what is called the principle of *Minimal Difference* between antonyms. This principle states that the 'best' antonyms, the ones that are recognised as such by most competent speakers of the language, only differ with regard to a single dimension of sense, while they are similar in respect of having all or most other senses in common. As was mentioned earlier, the antonyms 'hot' and 'cold' provide a good example of this, for they only differ in respect of the scale of

temperature; in all other respects they are semantically identical through being kinds or determinations of temperature. In the linguistic literature, this principle is apparent at least as early as 1970 (Clark, 1970, p. 275), and is commonly relied upon in most contemporary literature on the subject.

This property of semantic closeness is important because it allows for the regularity and, consequently, the generalisation of antonymous sense relations. If antonymy were instead some kind of relation of maximal difference, or unrelatedness, it would be non-recurring in a lexical system. While antonymy can be seen as a kind of relation that applies between many sets of terms, there are many relations between terms that do not seem so amenable to being generalised across the entire language, that is, they are non-recurring. For example, in order to make this point, Cruse names the relation between 'dog' and 'banana' (somewhat ironically) "dogbananomy". This is not a relation that would hold between any other lexemes; it does not recur like antonymy or the other canonical sense relations do (Cruse, 2000, p. 145). In order to understand this in more simple terms consider, for example, some questions that might be found on a standardised test. One question asks something of the form '*Hot* is to *Cold*, as *Alive* is to *X*?'; most competent speakers of the language will give the answer 'Dead', because they recognise the relation between 'Hot' and 'Cold' as being a recurring one and, pre-theoretically, as an opposition, despite this not being exactly the same kind of relation logically speaking as that between 'Alive' and 'Dead'. Now consider a second question of the form '*Dog* is to *Banana*, as *Rose* is to *X*?';⁷⁴ in principle there is no way to answer this question, at least not objectively, because the sense relation of *dogbananomy* is not a recurring one, that is, it does not hold between any other lexemes apart from 'dog' and 'banana'.

An important consequence of these considerations is that we cannot describe antonymy simply in terms of logical negation; this will not be enough on its own to individuate this relation. For example, denotatively, 'not-hot' includes 'cold' as well as 'dog', 'banana', 'rose', 'pig', 'green', and every other term besides 'hot'. This situation is analogous to taking a plane journey to 'not-Dublin', which I am sure that many of us have done. However, it is also not necessarily the case that we went to the same

⁷⁴ Pragmatically considered, the answer to this question might be 'pig', but only a small number of people with the requisite encyclopedic knowledge (world knowledge), that is, who are familiar with the work of both Cruse and Lyons, will get this *joke*. Lyons uses the example of 'rose' and 'pig' to make a similar point to the one that Cruse does, but he does not take the further intentionally absurd step of coining a name for this sense relation (cf. Lyons, 1977, p. 288).

places as each other, and it is more likely that we did not; for, to take a journey to 'not-Dublin' is to go anywhere but Dublin, and there are myriad such places.⁷⁵

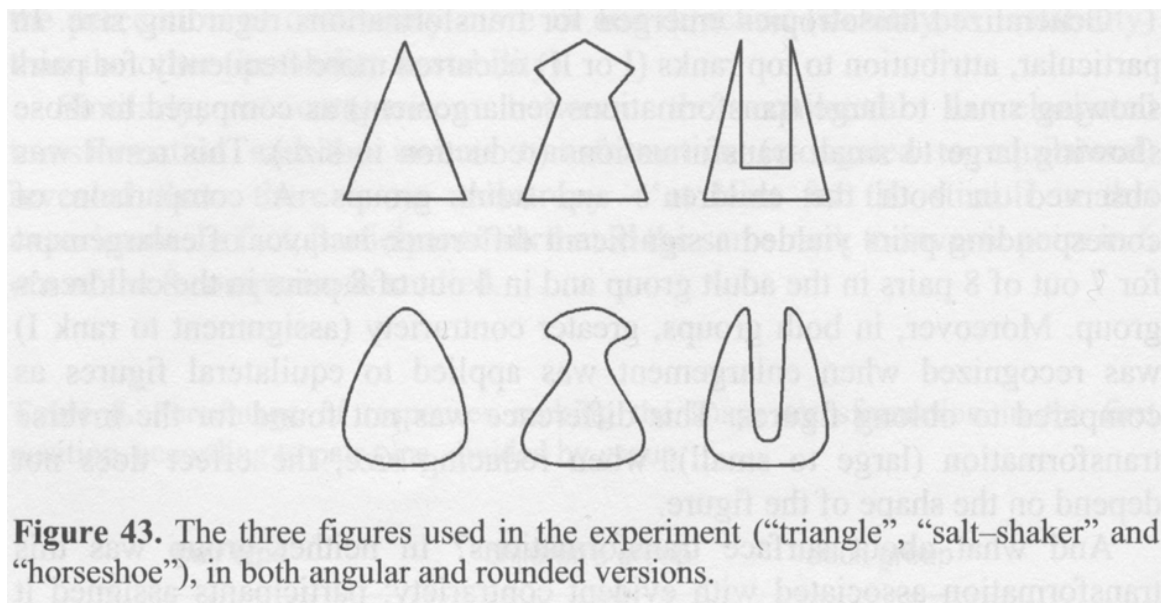
Interestingly, an analogue of the principle of *Minimal Difference* has also appeared as one of the results of recent psychological research into the visual perception of opposition, conducted by the *Experimental Phenomenology of Perception Laboratory*, at the University of Verona in Italy; the principal researchers being Ivana Bianchi and Ugo Savardi. These researchers are aware of some of the contemporary linguistic literature on antonymy, and they consider their own work to complement the investigation into the 'unique fascination' of opposites (Bianchi & Savardi, 2008, p. 11). Their work investigates the perception of what they call 'contraries', a technical term they employ so as not to be confused with the linguistic study of antonyms (Bianchi & Savardi, 2008, p. 13), but which, in my opinion, is likely to create more terminological confusion in a literature already overflowing with it, given that the term is also used to refer to a particular kind of logical relationship. I will say more about these terminological disputes in the linguistic literature later in this chapter.

In their work from 2008, *The Perception of Contraries*, they conclude that the perception of opposition between objects relies on there being invariance between the objects; that is, the objects must be similar enough with regard to most of their properties, in order to be perceived as opposites of each other. The other side of this finding is that the perception of opposition between objects is, in general, non-additive; that is, the recognition of global opposition (i.e., opposition directly perceived without recourse to analysis) does not increase when more of the local properties of the perceived objects are different from, or opposed to, each other; in fact, this is more likely to be perceived as 'diversity' rather than opposition (Bianchi & Savardi, 2008, p. 149). The following images are reproduced from one of the experiments that they derived this result from, and illustrate the point quite well.⁷⁶

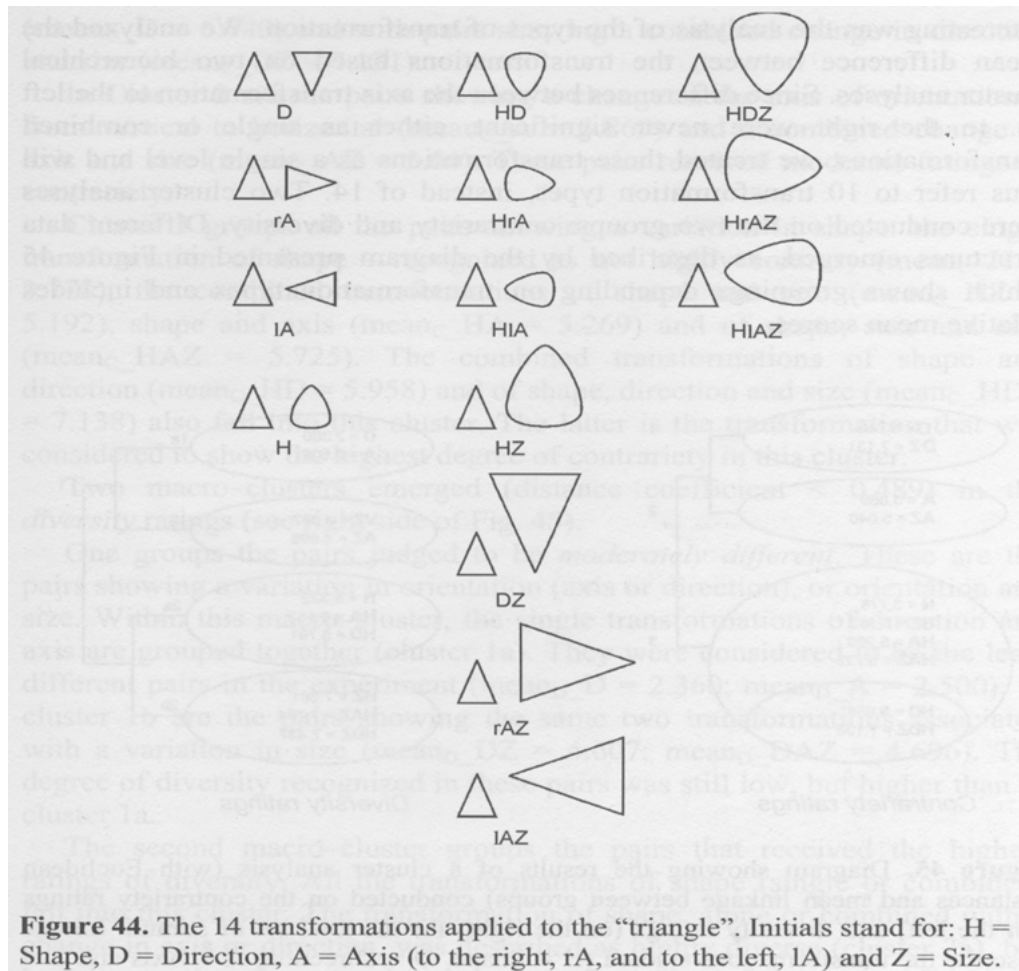
⁷⁵ Cf. Mourelatos (2008, p. 328) for a similar example and usage: "a journey to not-Ithaca".

⁷⁶ I am grateful to the publishers of this work, Aracne editrice, for their authorisation to reproduce these images.

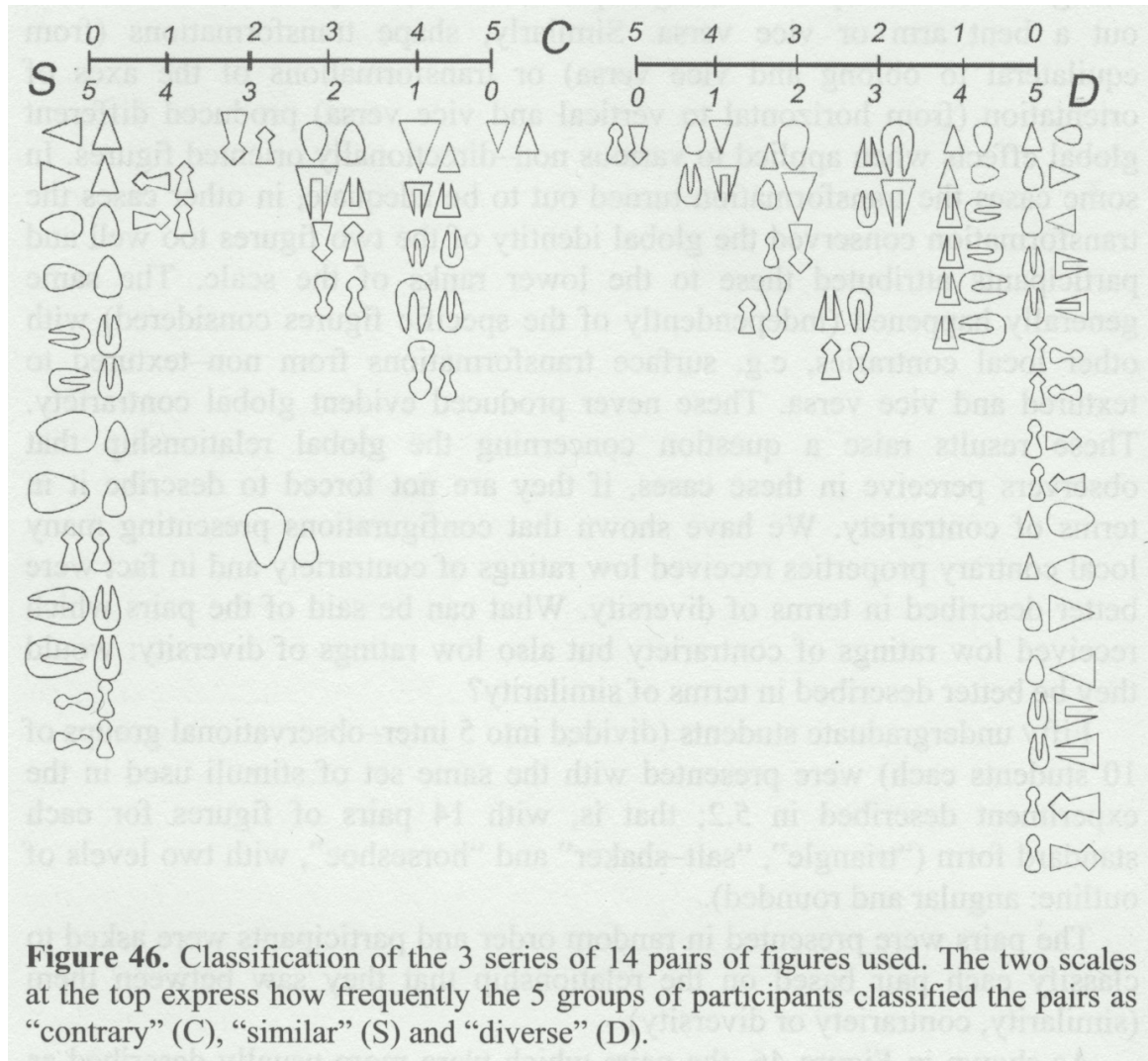
The first image presents the six basic figures used in the experiment, consisting of three distinct shapes with their rounded counterparts (Bianchi & Savardi, 2008, p. 120).



In the second image we see the fourteen kinds of transformation applied to the triangle; the transformations for the other figures are analogous. There are transformations with regard to combinations of shape, direction, axis, and size (Bianchi & Savardi, 2008, p. 121).



The third image is a representation of the results of one of the experiments using these transformations. The pairs of shapes are classified according to the participants' recognition of their *Similarity*, *Contrariety* (opposition), and *Diversity* (Bianchi & Savardi, 2008, p. 128).⁷⁷



This experiment provides a perceptual analogue of the point that I made earlier about antonymy and Cruse’s ‘dogbanonmy’, or non-recurring, non-canonical sense relations. What should be evident from the results presented above, is that the pairs of figures that are classified as appearing to be most opposed to each other, involve fewer transformations than those classified as appearing diverse, and also that they have more in common with each other than the figures that are classified as

⁷⁷ It appears that, for the purposes of this experiment, the categories of ‘Similarity’, ‘Diversity’, and ‘Contrariety’ were not defined by the researchers and, as such, it was left to the participants to interpret the meaning of these terms themselves in relation to the shapes and their transformations.

appearing diverse. The other aspect of the results that should be evident is that directional transformations have a far greater effect on the recognition of opposition than do axial transformations. So, while we may be able to analyse a pair of figures for the local basis of their opposition, we do not always directly perceive these local oppositional components and often perceive the situation as an instance of similarity or diversity instead.

There are many other interesting experiments and results presented in this psychological work,⁷⁸ but I will not discuss them here. I present the above experiment in order to show that there is an interesting parallel between linguistic and psychological phenomena regarding the *Minimal Difference* between oppositions, which I take to be the appearance of a facet of a principle of unity of opposites in both of these kinds of phenomena.

§1.2 Disagreements regarding the term ‘antonymy’, and its scope, in linguistics

There has been much disagreement about what the metalinguistic term ‘antonymy’ should refer to. Some linguists, such as John Lyons (1977) and Alan Cruse (1986), hold that the term should apply only to a specific kind of semantic opposition i.e., involving gradable opposites, opposites that are part of a scalar semantic dimension and are amenable to modification through the addition of terms such as ‘more’, ‘less’, ‘very’, ‘slightly’, etc. For example, the antonyms ‘hot’ and ‘cold’ are gradable because

⁷⁸ Although I find the psychological work of these two researchers fascinating and worthwhile, I think slightly less of their treatment of philosophy where it is apparent. There are a number of errors in their 2008 work that I would wish to point out to anyone deciding to read it; I will briefly do so here. In their introductory chapter they provide a brief survey of opposition in ancient philosophy. For present purposes, I will confine myself to a brief critique of their presentation of Heraclitus. They begin their presentation with a list of opposites: “male/female; black/white; high-pitched tones/low tones; long notes/short notes; vowels/consonants.” Arguably, none of these oppositions appear in the Heraclitean fragments and, if they do, they only do so implicitly. However, the authors’ most grievous error is that of attributing Heraclitus’ fragment 60 (The Road) to Anaximenes! This appears to be a nine-letter orthographical error, but it is an odd one, especially given that they refer to Heraclitus again in the next sentence (Bianchi & Savardi, 2008, pp. 18–19).

Towards the end of their book when they are stating the principles of opposition that have been (somewhat) derived from their experiments, they conflate the principle of non-contradiction with the principle of excluded middle. The statement of their third principle begins as follows: “P3. *The principle of mutual exclusion of contraries*. An event, object or property cannot *generally* coexist *at the same time and in the same place* as its contrary. When applied to phenomenology, the law of the excluded middle (P or not-P) developed in logics loses its general universal validity and admits the rare possibility of exceptions to the general rule. Exceptions are represented by all experiences perceived as “both $\hat{1}$ and $\hat{1}^c$ ” (e.g. a fever combined with cold shivers, the bitter-sweet of dark chocolate)” (Bianchi & Savardi, 2008, p. 146).

they admit of modifications such as 'hotter', 'colder', 'very hot', 'less hot', 'less cold', 'very cold', etc. Whereas, the opposites 'dead' and 'alive' do not normally admit of modification and are ungradable opposites; strictly speaking, one cannot say that something is more or less dead, or more or less alive, something is either alive or dead. We might imagine a case where some organism is dying and we say 'It is almost dead', but this would only be to say that 'It is still alive' and therefore not yet dead, and not something like 'It has more deadness', or 'It is neither alive nor dead'. As such, when an ungradable antonym is negated we may infer its opposite, but when a gradable antonym is negated it could also be the case that its opposite is negated e.g., 'This water is neither hot nor cold' (Lyons, 1977, pp. 271-2).

In contrast to the position held by Lyons and Cruse, it is clear that Ruth Kempson (1977) thinks of antonymy from the opposite standpoint; she describes what she calls examples of "simple binary opposition", what Lyons calls 'ungradable opposition', as being "the true antonyms", as opposed to the gradable kind. However, she still accepts the fact that 'antonymy' is the term that is in general use for oppositeness of meaning, although she finds it to be "unhelpful" due to there being many kinds of opposition (Kempson, 1977, p. 84).

This terminological dispute has caused a lot of confusion in the literature, given that one must always make sure to be aware of which usage of the term 'antonymy' it is that a particular author subscribes to. Most authors now include, as a matter of course, specifications or disclaimer regarding how they intend to use the term. My own judgement is that it would be more sensible to adopt a usage of the term that is in accord with its everyday usage, especially as used in dictionaries and thesauri, while also being in-line with its initial coinage by Smith, as simply a technical term for oppositeness between words and/or their meanings. To do otherwise would be redundant and pedantic or, for that matter, an example of the *linguist's fallacy* i.e., that everyone is intuitively aware of the matters that the linguist is aware of. After all, there would seem to be nothing barring us from employing other terms to distinguish the various kinds of antonyms. In some more recent linguistic treatments of antonymy that have been carried out by Steven Jones (2002), Lynne Murphy (2003), Dirk Geeraerts (2010), Jones, Murphy, Carita Paradis, and Caroline Willners (2012), these linguists have wisely decided to adopt this approach, while others, such as Leslie Jeffries (2010), somewhat abandon the word 'antonym' in favour of the informal term 'opposite'. I will, in general, refer to oppositions between

words or their meanings as 'antonymy', but without excluding the informal (and, indeed, more general) term 'opposite' or 'opposition' entirely. As we will see in the next chapter, Jerrold J. Katz also adopted a similar position regarding the use of the word 'antonymy', given that all kinds of antonyms have, at least, mutual exclusivity of application in common (Katz, 1972, pp. 158–159).

There has also been disagreement among linguists as to what the scope of the concept of antonymy should be i.e., whether or not there is a single general concept of antonymy over and above its many kinds. Here again I follow Jones in avoiding the obfuscation of our conception of antonymy as derived from everyday usage. Jones explains this thus:

Whilst it is true that antonymy encompasses a multitude of relationships, each slightly different from the next, it is equally true that all established 'opposites' in English share something in common. Any native speaker would immediately identify the 'opposite' of words such as cold, legal and above without feeling the need to distinguish between gradable antonymy, complementarity and converseness. To deny the status of antonymy to any familiar pair of 'opposites' seems counter-intuitive and likely to obscure the underlying uniformity of all such word pairs. (Jones, 2002, p. 2)

Jones, Murphy, and their co-authors make similar statements again in their more recent work:

It has been established that, unlike for other relation types, people have strong intuitions that various types of opposite relation all count under an umbrella category of OPPOSITE WORDS or ANTONYMS. (Jones et al., 2012, pp. 1–2).

In her 2003 work, Murphy also recognised this 'umbrella category' as being an archetypical kind of lexical semantic relation:

Antonymy (referring to binary opposition generally) is arguably the archetypical lexical semantic relation. Unlike synonymy, everyone agrees that antonymy exists, and it is robustly evident in natural language. Unlike hyponymy and meronymy, it can be as much a relation among words as it is a relation among concepts or denotata. (Murphy, 2003, p. 169)

While it is true that the term 'Antonymy' in linguistics has a meaning that goes beyond its being merely a semantic relation (i.e., a relation between senses), given

that it is also considered to be a relation between lexemes and the word forms of a language, I shall not address the latter manifestation of antonymy in very much detail. The reason behind this methodology is that, although I consider research into lexical and word form relations to be valid and interesting in its own right, I do not consider it to hold much immediate philosophical interest and, as such, it is a matter best left to linguists to consider, aided by attendant empirical investigations. The traditional preserve of philosophy in this area is firmly rooted in semantic and logical considerations, being driven by the need to know what follows from what and why, which is of prime importance to philosophers for obvious reasons. As such, on this methodological issue I am in broad agreement with the position adopted by Jerrold J. Katz, which I will discuss in the next chapter.

In connection with this point, we should think twice before agreeing with Murphy that “everyone agrees that antonymy exists”. Certainly every philosopher not presently occupying a pedantic mood would agree that some words have other words that people consider to be their ‘opposites’ and, like any other member of the speaking population, would be able to furnish us with examples upon request. However, some philosophers (e.g., Quine), may feel just as wary about saying that the sense relation of antonymy *exists* as they would be about saying that synonymy *exists*, and for similar reasons.⁷⁹ For example, it may be because they think that there are not any such things as extant senses or concepts for there to be relations between. So, we should at least be wary at the outset of what Murphy seems to think of as being obvious or something that everyone agrees upon, if not to reject it as being an instance of *argumentum ad populum*.

§2.1 The major kinds of antonymy

We will now take stock of, and examine, what the linguists take to be some of the major kinds of antonymy, and the distinctions between them. We have already briefly discussed the difference between *gradable* and *ungradable* antonyms while discussing the main terminological dispute above. This distinction usually applies to adjectival antonyms and is related to the logical distinction between contrary and

⁷⁹ Murphy relies on this point herself earlier in her book when she says of Quine’s argument against analyticity that it “depended in part on the position that analyticity must ultimately be defined in terms of the paradigmatic semantic relations and that the paradigmatic semantic relations must ultimately be defined in terms of analyticity” (Murphy, 2003, p. 64).

contradictory sentences. The truth of a sentence that predicates an ungradable antonym, entails the truth of another sentence that predicates the negation of the other antonym in the pair; for example, 'That person is not alive', entails 'That person is dead', and *vice versa*, where 'that' refers to the same object. That is to say that the sentences 'That person is alive' and 'That person is dead' are contradictory, they cannot both be true, or both false at the same time (given, that is, certain presuppositions e.g., that the reference is indeed to an entity that is appropriately called 'dead' or 'alive', a person, an organism, etc.). Ungradable antonyms are also called *complementaries* given that they divide a domain of discourse dichotomously, and exhaustively, into a term and its complement i.e., A and not-A (or, A and B). Although in cases of sentences containing gradable antonyms the truth of a sentence such as 'That water is hot' entails 'That water is not cold', the truth of the latter does not entail the truth of the former. That is to say that the sentences 'That water is hot' and 'That water is cold' are contraries, meaning that they could both be false at the same time, but not both true (Lyons, 1977, pp. 271-2). This follows from the fact that they do not divide a domain of discourse dichotomously.

It may not be entirely certain that there is a sharp distinction between gradable and ungradable antonymy, at least, that is, pragmatically. They may instead be part of a scale that simply contains prototypical cases at either end and less well distinguished cases closer to the centre, as was suggested by Cruse (Cruse, 1986, pp. 200-1). Jones also tells us that the distinction between gradable and ungradable antonymy "usually comes with a disclaimer: most non-gradable antonyms are, in fact, commonly graded in text", and notes "the tendency of non-gradable pairs to function in a similar way to gradable pairs" (Jones, 2002, p. 169).

Another major kind of antonymy is that of *Reversives*, which denote such things as motions, actions, processes, and changes, that proceed in opposite directions; they are often represented as verbs. Rose F. Egan's introduction to *Webster's New Dictionary of Synonyms* (1968) has often been cited by linguists as an early locus for this kind of antonymy. There she gives the following characterisation of them: "*reverse terms*: these comprise adjectives or adverbs which signify a quality or verbs or nouns which signify an act or state that reverse or undo the quality, act, or state of the other" (Egan, 1984, p. 27a). However, it should be noted that the word

'reversive' was used in print as far back as the early 19th century, with technical linguistic uses at least as far back as 1857.⁸⁰

Some examples of reversives would be: 'rise' and 'fall', 'ascend' and 'descend', 'advance' and 'retreat', 'enter' and 'leave', etc. (Cruse, 1986, p. 226). There is a further distinction made by Cruse between *determinate* and *relative* reversives. The determinate kind is distinguished by the fact that it involves changes between two determinate states; for example, 'tie' and 'untie', 'appear' and 'disappear', 'enter' and 'leave'. The relative kind is distinguished by the fact that it involves changes between two relative states; for example, 'widen' and 'narrow', 'accelerate' and 'decelerate', 'heat' and 'cool', 'ascend' and 'descend' (Cruse, 1986, p. 226).

This distinction seems to be grounded in the earlier distinction between complementary and contrary antonyms, in the sense that the adjectives that would be used to describe the states are themselves either separated dichotomously and exhaustively or are not (or are related along a continuous scale); for example, in the case of 'tie' and 'untie', something can either be tied or untied, but not both or neither (a complementary antonymy); whereas in the case of heat and cool, something cannot be both hot and cold, but can be neither hot nor cold (a contrary antonymy). I will provide further justification for this claim in the next chapter, when I will discuss how reversives can be defined in terms of Katz' semantic theory.

Another major kind of antonymy is that of *Converses*, which denote relational antonyms regarding relationships between things, states, and times; for example, 'tenant' and 'landlord', 'above' and 'below', 'before' and 'after'. Kempson tells us that "A pair of lexical items form a converse pair if for two items x and y, the following sentence relations hold: AxB implies ByA, and AyB implies BxA." (Kempson, 1977, p. 85).⁸¹ For example, " 'X is the landlord of Y' entails and is entailed by 'Y is the tenant of X' " (Jones, 2002, p. 17). Some gradable antonyms (contraries) can act as converses when used in comparative sentences such as 'It is hotter today than it was yesterday', which entails 'It was colder yesterday than it is today'. Notice here that we could still

⁸⁰ The earliest technical linguistic usage of the word that I have found is in *Principles of Efik grammar*, by Hugh Goldie (1857, pp. 31ff). Here the word is used in a grammatical context to refer to verbs modified by an affix, such as, 'un-cover' being a modification of 'cover' (English translations given for the Efik words). Although this pair of verbs would also be classed as antonyms today, 'reversive', as the term used in this text, refers only to the verb that contains the affix, e.g., 'un-cover', and not to the verbs as a pair. There are a number of other examples of grammatical treatises from the same period, which also employ this same terminology.

⁸¹ Lyons (1977, p. 280) gives a similar definition to that given by Kempson.

say that 'It is neither hotter nor colder today than it was yesterday', thus showing the contrariety of 'hotter' and 'colder'.

Converse antonymy is not restricted to being between dyadic relations; the antonymy between *n*-ary relations are often defined in an analogous manner to that in which Kempson and Jones have done, as presented above. An example of such a general definition involving *n* argument places is offered in Ronnie Cann's work *Formal Semantics* (1993, p. 221), which will be considered later in this chapter. For the moment, Lyons' example of 'buy' and 'sell', involving (in this case) three argument places, will suffice for the purposes of illustration of converses with greater than two argument places: " 'buy'(x, y, z) \equiv 'sell'(z, y, x) [...] 'X bought Y from Z' : 'Z sold Y to X' " (Lyons, 1977, p. 280).

It should also be noted that the category of converse relations in general is broader than being merely a category of antonymy; it also includes pairs for which a purely active/passive grammatical relationship obtains such as the pair 'loves' and 'is loved by', in sentences such as 'a loves b' and 'b is loved by a'. These relationships are distinguished from antonymy by the presence of the same lexeme in both members of the pair, and by the lack of incompatibility in their relationship. For example, there is nothing that prevents *a* being loved by *b* where 'a loves b' is true; but, in an antonymous case, for example, if 'c is above d' is true, then 'c is below d' cannot be. The quoted definitions given by Kempson and Jones above do not mention incompatibility and are therefore insufficient to distinguish antonymous converses from converses generally. This will be discussed further later in this chapter when we examine Cann's definitions and, indeed, again in the next chapter when we discuss those given by Katz.

We can consider the distinction between the two main kinds of relational antonyms, reversives and converses, in at least two ways. Reversive antonymy tends to hold between the meaning of dynamic words representing such things as pairs of motions, actions, processes, and changes, which proceed in opposite directions; while, converse antonymy tends to hold between the meanings of static words representing relationships between things, states, and times. However, this is not a hard and fast rule. For example, consider the pair 'buy' and 'sell', which represent processes but are still converses rather than reversives. Instead, a better way to construe the distinction between reversives and converses is in terms of dependence. Converses depend on each other in the sense that each of their predications requires

the other: For example, if someone is a 'tenant' of someone, then someone else is their 'landlord'; if something is 'above', then something else is 'below' it; something before is 'before' something 'after' it, etc. However, in the case of reversives, if you 'tie' something it does not imply that something else is thereby 'untied' (although it may imply that the thing was previously untied or in an untied state); if you 'enter' somewhere it does not necessarily imply that you 'leave' somewhere else.

Although there are other kinds of antonymy distinguished in the linguistic literature, including further sub-categories (especially in Cruse 1986), it is not always clear that they are readily distinguishable semantically (although this possibility remains open), as such, we will not examine them here. Jones advises us that "The more restrictive the categories become, the more tenuous grows the link between the technical term 'antonymy' and the universally recognised concept of 'opposites' " (Jones, 2002, p. 20). Even in the case of the four main kinds described above there is often some overlap of the categories of antonymy that certain forms of lexemes fit into; such as, the example of the converse comparatives 'hotter' and 'colder', which was given above. Having acknowledged this point, we still must consider another kind of antonymy where the relationship between binary instances of antonymy and antonymy as it appears between multiple terms should be assessed, given that examples this kind are quite common phenomena. We discuss this kind of antonymy in the following section.

§2.2 Non-binary antonymy (NBA)

Another important issue in the study of antonymy is its relationship to other kinds of semantic opposition. Antonymy is often considered to be a semantic relation between two terms, but there are other sets of opposed terms in language with more than two members. These are known variously as 'non-binary contrasts' (Lyons), 'multiple taxonomic systems' and 'hierarchic systems' (Leech), 'multiple taxonomies' (Kempson), 'multiple incompatibility' (Jones), 'multiple antonyms' or 'multiple opposition antonyms' (Geeraerts), 'contrast sets' (Murphy), 'incompatibles' (Cruse), 'Taxonomic sisters' (Saeed). This large array of different terminology for these sets is a symptom of the disagreements among linguists about what place they hold in the structure of the language. This disagreement is analogous to the one that was examined earlier regarding what the word 'antonym' should refer to i.e., whether it

should refer to all kinds of antonyms, just gradable and ungradable adjectival antonyms, or just gradable antonyms.

Lyons tells us that, although many non-binary oppositions may “ultimately prove to be analysable in terms of several binary distinctions” (he gives as an example the set of colour terms, although this may be doubtful), there do seem to be some that cannot be reduced in this way; he gives as examples the names of the days of the week, months of the year, and of flowers (Lyons, 1977, p. 287). Lyons makes the point about non-binary antonymy that it “as a structural relation, is not always clearly distinguishable, pre-theoretically at least, from what we would be inclined to describe as unrelatedness of meaning” (Lyons, 1977, p. 288). That is, for theoretical purposes we would like to be able to describe the difference between a set such as {‘Monday’, ‘Tuesday’, ... , ‘Sunday’} and a set of unrelated terms.

This is also the case for binary oppositions; while antonymy can be seen as a general relation that applies in the same or a similar manner between many different sets of terms, there are many relations between terms that do not seem so amenable to being generalised across the entire language i.e., they are non-recurring. This was mentioned earlier both in terms of Cruse’s ironic ‘dogbananomy’ relation, and my thought experiment involving a standardised test. Lyons uses the example of ‘rose’ and ‘pig’ to make a similar point; he also says that “The important point is that [NBA] as a lexical relation, like opposition, is based on contrast within similarity” (Lyons, 1977, p. 288). This is important because the method of describing NBA in terms of logical negation does not limit the scope in this way; rather, the negation of a term could imply any other term in the entire language. However, this is not usually how we use antonyms; if I say that ‘This is not red’, I would usually be interpreted as intending the meaning that it was a colour that is incompatible with red, not as saying that it is something else or has some other quality like ‘plastic’, ‘small’, ‘is a banana’, etc.

Lyons distinguishes kinds of many-membered sets related by NBA. He makes a distinction between *serially* and *cyclically* ordered sets. This distinction is based on whether the terms are ordered in a series with two outer terms, or in a cycle where every term is ordered between two other terms. Serially ordered sets may be further distinguished into *scales* and *ranks*; this distinction is comparable to that between gradable and ungradable antonymy discussed earlier i.e., scales are gradable and ranks are ungradable (Lyons, 1977, p. 289). Jones tells us that “Lyons’ notion of ‘scale’

is too closely related to gradable antonymy to warrant differentiation” (Jones, 2002, p. 19). This is indeed an important point, which we will return to in the next chapter when we discuss how Katz’ semantic theory draws the distinctions between different kinds of antonymy.

The distinction between serial and cyclical seems to be based on the opposition between ‘line’ and ‘circle’, or ‘open-ended’ and ‘closed in a loop’. There is still only one dimension with two directions involved here; a serially ordered set has two ends or directions, and a cyclically ordered set has the two directions ‘clockwise’ and ‘anticlockwise’ so to speak. However, it is not clear that all non-binary oppositions can be analysed in this way; for example, the set of the names of flowers, which does not seem to be ordered in the same way as the set of military ranks, or days of the week, etc. Instead, they are merely governed by the hyponymy relation, given that they are a set of co-hyponyms that have the hyperonym ‘flower’. That is, contrary to the serially and cyclically ordered sets, the set of the names of flowers does not seem to have an ordering in terms of their senses. Another example of this, which Kempson gives us, is the set {dining-room, sitting-room, bedroom, kitchen, bathroom} (Kempson, 1977, p. 84), the members of which are all co-hyponyms of the term ‘room’.

§3 Antonymy and logical opposition

In this section I will discuss the problem of defining antonymy (semantic opposition) in terms of logical opposition. This is an issue that has been touched on already during the earlier discussions in this chapter. It is an issue that has been continually noted by a number of linguists. For example, in his influential treatise on antonymy from 1994, Arthur Mettinger recognised that the problem of defining semantic opposition in terms of logical opposition, which has arisen in 20th century philosophy of language and linguistics, can be traced to its origins in ancient Greek philosophy:

The question whether semantic opposition is a manifestation or function of logical opposition has given rise to a number of discussions [...] with as many arguments in favour of a logical treatment of semantic opposition as against it. The problem seems to be founded in the dichotomy of “language” vs. “thought” and consequently, of “meaning (= Bedeutung)” vs. “concept (= Begriff)” dating back to Greek philosophy. (Mettinger, 1994, p. 15)

Mettinger himself is on the side of those who are against defining semantic opposition in terms of logical opposition, and points to Lyons' shift to use of the gradable/ungradable distinction as a semantic basis for the distinction between kinds of antonymy (Mettinger, 1994, pp. 16–17). Jones and his co-authors (2012) point to the fact that logical incompatibility is not enough to pick out only antonyms, because it picks out other incompatible lexemes also:

One could define oppositeness in terms of logical incompatibility – that is, if a thing can be described by one of the members of an antonym pair, it is impossible for it to be described by the other. So, if a person is a *man*, he is not also a *woman*. If a piece of string is *long* with reference to some contextual standard, it cannot also be *short* with reference to the same standard. But logical incompatibility is an insufficient criterion for defining oppositeness, since many pairs of lexemes are semantically or logically incompatible, but this does not lead to their use as antonyms. So, while it is unlikely for something to be both a *limerick* and a *pencil*, this is not reason enough to think of *limerick* and *pencil* as opposites. (Jones et al., 2012, p. 3)

We question the validity of truth-conditional entailment (i.e. given the truth of p, [not p] is false) as an adequate method of confirming how people interpret antonymous meanings with negation in natural language. (Jones et al., 2012, p. 90)⁸²

According to the linguists presented above, logical opposition is not sufficient for defining antonymy. In the remainder of this section, and then again in Chapter 5, I will discuss a particularly prominent example from the linguistic literature of a method for defining semantic opposition in terms of logical opposition. This method employs what are known as *meaning postulates*, which are universally quantified conditional or biconditional expressions given in a predicate calculus that are used to state axioms for the extralogical expressions of a language. The discussion in the next chapter will also involve the philosophy of language, given that this method was originally introduced by Rudolf Carnap and was subsequently rejected by Willard Van Orman Quine. There I shall primarily rely on a number of arguments put forward by Jerrold J. Katz against the use of meaning postulates in order to show that they are not capable of providing definitions of antonymy and its kinds. In what follows, I will briefly outline one example of the formal methods of defining antonymy in terms of meaning postulates, which was presented by Ronnie Cann in his 1993 work *Formal*

⁸² Square brackets in original.

Semantics. I will also outline some problems with this approach, which I will take up again in Chapter 5 before presenting solutions to these problems, derived from Katz' own semantic theory, later in that chapter.

Cann's definitions for each of the kinds of antonymy are given in terms of meaning postulate schemata. These schemata each present the form that a meaning postulate for a specific predicate must take in order to be counted as an instance of the kind of antonymy being defined. As such, Cann employs the symbols X' and Y' for the parameters of these schemata,⁸³ which would be replaced by the predicate constants representing antonyms in particular instances of these meaning postulates in a language.

Cann's most general term for antonymy, 'Opposites', names what is really just a kind of incompatibility relation between sets of things that are the extensions of expressions given in a predicate calculus. This is a very broad use of the term 'opposite' because, while being applicable to words that are intuitively considered to be antonyms, it would also include relations between words that are merely incompatible with each other. It is also quite odd that he uses this terminology only two pages after also calling 'tulip' and 'rose' "opposites", in the sense of being "incompatible co-hyponyms" of 'flower' (Cann, 1993, pp. 218, 220), which is of course a much more restricted notion than that of mere incompatibility. His definition is as follows:

Opposites: X is an opposite of Y iff there is a meaning postulate relating X' and Y' of the form:
 $\forall x [X'(x) \rightarrow \sim Y'(x)]$ (the extension of X is distinct from that of Y). (Cann, 1993, p. 220)⁸⁴

This broad definition spells out a necessary condition for most kinds of antonym; in each instance of antonymy (involving monadic predicates) the terms involved must be related in this way, if not in some other ways also. Further, as Cann says, "the different types may be distinguished by imposing further restrictions" (Cann, 1993, p. 220). As such, he defines complementary antonyms as follows:

⁸³ The 'superscript prime' notation employed by Cann, which is the apostrophe: ', "indicates that the symbol is not a word in the object language, e.g. English, but an expression in the translation language [...] For example, the English word forms *gives, give, gave, given*, are all associated with the citation form *give* and the translation of any of these word forms into [a logical language] is thus *give*" (Cann, 1993, p. 35).

⁸⁴ The square brackets in all of Cann's quoted definitions are his own.

Complementaries: X is the complementary of Y iff there is a meaning postulate relating X' and Y' of the form: $\forall x [(X'(x) \rightarrow \sim Y'(x)) \ \& \ (\sim X'(x) \rightarrow Y'(x))]$ (the extensions of X and Y are distinct and the complement of the extension of X is equal to the extension of Y). (Cann, 1993, p. 220)

He then defines what he calls 'antonyms' (in the narrow sense of gradable opposites) as being "opposites restricted to a particular domain", as follows:

Antonyms: X and Y are antonyms iff there is a meaning postulate relating X' and Y' of the form $\forall x [\forall P[(X'(P))(x) \rightarrow \sim(Y'(P))(x)]]$ (the extensions of X and Y are distinct for some given domain). (Cann, 1993, p. 221)

Cann admits that "Strictly speaking such meaning postulates go beyond the extensional semantics so far developed [...]" (p. 221), however, he does not return to this kind of postulate again when giving an account of the intensional part of his semantics later in his book.⁸⁵ 'P' here stands for some property of the object being referred to; Cann uses the example of being an elephant. So, what is called 'big' cannot be called 'small' in the same respect, i.e., that of being an elephant; however, even a small elephant could be called 'big' in respect of being an animal.⁸⁶ This is my own reconstruction of Cann's explanation; unfortunately, Cann convolutes his explanation of this idea and, at one point, manages to write some patent nonsense: "For example, a big mouse is not small for a mouse although it may be small for an elephant" (Cann, 1993, p. 221). 'Small in respect of being an elephant' is not a property a mouse could have, especially given Cann's own meaning postulate for this component of the meaning of 'Small'. Although this mistake is undoubtedly what one might term a 'clanger', it nonetheless points to a weakness in Cann's approach. That is, the meaning postulate approach does not provide a method of determining what the property P might be (which, of course, is a problem that would be greatly compounded by a situation, *per impossibile*, in which mice can be small for elephants!) It should be fairly clear from

⁸⁵ It should also be noted that, for Cann, both extension and intension are kinds of denotation, which are distinct from what he calls 'sense' (Cann, 1993, pp. 267–8).

⁸⁶ We should note that there is a minor inadequacy with Cann's example of (i) 'big' / 'small' in that it is linguistically controversial. Compare this with (ii) 'large' / 'small', (iii) 'big' / 'little', and (iv) 'large' / 'little'. (ii) and (iii) are considered by most speakers to be canonical; (i) is disputed, and (iv) is often considered improper. However, this seems to be a purely lexical issue or one to do with the relative distributions of co-occurrences of these surface forms in English and, as such, I will not consider the matter further here (cf. Jones, 2002, p. 11; Murphy, 2003, p. 32).

my reconstruction above that P must at least name a property of the object being referred to. We will return to this problem again later when we come to discuss Katz' solution to it in Chapter 5.

The final kind of antonymy that Cann defines is that of Converses, which are relational antonyms. He defines converses with n argument places generally as follows:

Converses: X is the converse of Y iff there is a meaning postulate relating X' and Y' of the form: $\forall x \dots \forall y [X'(y) \dots (x) \rightarrow Y'(x) \dots (y)]$ (whenever $\langle e_1, e_2, \dots, e_n \rangle$ is in the extension of X, $\langle e_n, e_{n-1}, \dots, e_1 \rangle$ is in the extension of Y). (Cann, 1993, p. 221).⁸⁷

However, Cann tells us that this definition by itself does not pick out a kind of antonymy, given that some converses are not antonyms, for example, those that are part of extensionally equivalent active and passive sentences employing converse relations, such as, 'a loves b' and 'b is loved by a'.⁸⁸ Although he does not state so explicitly, Cann implies by his use of certain examples, e.g., " $\forall x [\forall y [(left_of(x))(y) \rightarrow \sim(right_of(x))(y)]]$ " (p. 221), that converse antonyms must be related also by a meaning postulate analogous to that of the schema for the broad category of 'Opposites' above. His examples imply that they should be instances of a schema of the form ' $\forall x \dots \forall y [X'(x) \dots (y) \rightarrow \sim Y'(x) \dots (y)]$ ', i.e., one that accommodates polyadic predicates. This can be seen from the fact that, for example, there is nothing about the meaning of 'loves' that prevents 'a is loved by b' being true when 'a loves b' is true; however, in the case of something being said to be to the left of something else, this precludes the former from also being said to be to the right of the latter, this is because 'left (of)' and 'right (of)' are opposites.

What is bizarre about Cann's treatment of converses in particular is that, although he distinguishes between converse oppositions and converses more generally, and in a similar way to how I have reconstructed above, instead of the above example of active-passive converses he provides 'buy' and 'sell' as an example of converses for which "there need not be an oppositeness relation involved" (Cann,

⁸⁷ 'e' is a type-theoretical expression for an individual.

⁸⁸ It should be noted here that Cann treats of the relationship between active and passive sentences using lambda calculus; as such, he would not employ meaning postulates corresponding to his schema for converses, for this purpose. I include the example of 'loves' and 'loved by' precisely because I do not believe that Cann's own example of non-oppositional converses, i.e., 'buy' and 'sell', stands up to scrutiny; that is, I think that they are legitimate antonyms. I discuss his example in the following paragraph.

1993, p. 217). He attempts to justify this statement by employing the following example: “*Bertie bought some gin from Ethel* does not imply that *Bertie didn’t sell some gin to Ethel*, though it does imply that *Ethel sold some gin to Bertie*” (Cann, 1993, p. 217). However, this *apparent* counterexample is due to certain ambiguities in these sentences, which may be explained in one of the following two ways: (i) the gin that is referred to by the first and third sentences is not the same gin as that referred to by the second sentence, in which case they cannot be substituted for the same variable in the meaning postulate; (ii) the gin referred to by the three sentences may be the same throughout, but there are further complications introduced by tense; i.e., the sentences are not describing a single transaction, but rather at least two transactions. Thus, although ‘Bertie bought some gin from Ethel’ does not imply that ‘Bertie did not sell some gin to Ethel (*at some other time*)’, it still must imply that Bertie did not **both** buy the same gin from, **and** sell the same gin to, Ethel through the same process (at the same time), for this would be where the contradiction in virtue of the converse opposition lies.

If we were to adopt the principle suggested by Cann’s discussion here, it would be likely that few converses, if any, which are polyadic predicates with valences greater than two, i.e., those that accept more than two arguments, could be considered as having an oppositeness relation between them. This is because *apparent* counterexamples to their being opposed, analogous to those that Cann employs above, which involve ambiguities of reference, tense, etc., could be constructed for these cases. Cann’s opinion, regarding ‘buy’ and ‘sell’ not necessarily having a relation of oppositeness between them, would seem to go against speakers’ best intuitions of which converses count as opposites, and also against the treatments given by all of the other prominent linguists whose views I have been considering (e.g., Lyons, Kempson, Cruse, Jones, Murphy, Geeraerts, et al.). In fact, *buy/sell* is one of the most commonly used exemplars of converse antonymy in the literature; in light of this, we should treat Cann’s claim as being a rather strong one. His treatment of the example does not take any account of its prominence in the literature and its pre-theoretical recognition as being oppositional. Furthermore, it would also lead to contradictions, like the one I have suggested above, being admitted by, or being unpredictable on the basis of, the semantic theory.

Although Cann’s analysis of the *buy/sell* relation may have been incorrect, there is still some merit to the manner in which the system of meaning postulates

implies a distinction between the converseness of the relation and its oppositeness. This is something that does not seem to have been recognised in other treatments of converse antonymy. Instead, most other linguists seem to treat the oppositeness of converse antonyms as resulting from their converseness. For example, Murphy, when describing the unique properties of converse antonyms, and comparing them to complementary antonyms says:

The relational nature of converses, on the other hand, involves an exchange, rather than a change, in the words' semantic material: whereas *buy* describes a relation with X as an agent and Y as a patient, *sell* is its opposite because it describes the same event but with those roles switched: Y is the agent and X is the patient. (Murphy, 2003, p. 198)

Notice here that it is stated that 'sell' is the opposite of 'buy' because of their being opposed descriptions of the same event, in such a way that the places that the arguments of these predicates are in are permuted, e.g., 'Sy... x' and 'Bx... y'. However, the logical incompatibility of 'Xy... x' and 'Yy... x', where the arguments are kept in the same order for both antonyms, is not derivable from the logical equivalence of 'Xy... x' and 'Yx... y', where they are not. That is, it is not the meaning postulate that stipulates the logical converseness of the antonyms 'sell' and 'buy' that accounts for the fact that 'Sy... x & By... x' is a contradiction, rather, it is the postulate that stipulates the incompatibility of 'sell' and 'buy'. Thus, separate meaning postulates are required in order to capture the converseness and the incompatibility of two polyadic predicates. We will return to this point again later when we discuss Katz' treatment of converse antonymy in the next chapter.

§4 The problem of the status and origin of antonymy

Through studying the literature regarding the lexical semantics of antonymy, I came across a reoccurring problem in the literature; while the linguists seek to describe and define the antonymy sense relation, there is an underlying philosophical problem lurking regarding where antonymy is derived from in the first place and why it is such an important element of our language. Lyons first broaches this topic in 1968, when he says:

The existence of large numbers of antonyms and complementary terms in the vocabulary of natural languages would seem to be related to a general human tendency to ‘polarize’ experience and judgement—to ‘think in opposites’. (Lyons, 1968, p. 469)

The talk of relatedness here is a little unclear, but it could be taken to mean that the existence of antonymy (opposition) in language is due to a tendency to ‘think in opposites’. This certainly seems to be the way that Lyons’ statement has been read by Adrienne Lehrer and Keith Lehrer, who say of it also that:

If it is true [...] then the lexical relationship of antonymy is too important to be ignored, as it has been in the contemporary philosophy of language. In addition, it is desirable to provide an analysis of this concept, rather than taking the notion as a primitive. (Lehrer & Lehrer, 1982, p. 498)

Even if we read Lyons’ 1968 statement in this way, it is clear that by 1977, in his work *Semantics*, he is less committed to this view when he says the following:

We can leave to others to enquire whether the tendency to think in opposites, to categorize experience in terms of binary contrasts, is a universal human tendency which is but secondarily reflected in language, as cause producing effect, or whether it is the pre-existence of a large number of opposed pairs of lexemes in our native language which causes us to dichotomize, or polarize, our judgements and experiences. It is, however, a fact, of which the linguist must take cognizance, that binary opposition is one of the most important principles governing the structure of languages; and the most evident manifestation of this principle, as far as the vocabulary is concerned, is antonymy. (Lyons, 1977, p. 271)

This problem is echoed in a similar fashion by Steven Jones in his 2002 work, *Antonymy*; there he says that:

[...] the integral position held by antonymy in the mental lexicon is something of a chicken-and-egg situation. It is almost impossible to know whether language simply reflects existing oppositions in the outside world or whether we, as humans, are subconsciously predisposed to impose such dichotomies. Whatever the cause, the consequence is that ‘opposites’ hold a key place in language and this is reflected by the pull of antonymy to learners of a first or other language. (Jones, 2002, p. 3)

While it is clear that both linguists are concerned about this problem, both of them avoid taking it up; either due to its being outside of their field, or seeming to be

“almost impossible” to solve. However, we may choose to see this as a philosophical problem. We may start by analysing the tentative choices that are presented to us by the linguists:

Is it a “universal human tendency” OR the pre-existence of opposed pairs in our native language; which causes us to “to think in opposites, to categorize experience in terms of binary contrasts [...] to dichotomize, or polarize our judgements and experiences”. (Lyons)

Humans are “subconsciously predisposed to impose dichotomies,” OR our language “reflects existing oppositions in the outside world”. (Jones)

It is interesting to note here that both of these linguists present us with a binary choice between their alternative explanations. However, the options offered by each are not entirely the same; while for our current purposes we may conceivably identify a ‘subconscious predisposition of humanity’ with a “universal human tendency”, that our language “reflects existing oppositions in the outside world” would seem to act more as an explanation of ‘the pre-existence of opposed pairs in our native language’ (depending, that is, upon the exact meanings of ‘language’ here); the latter by itself would not be an explanation of the origin of these oppositions themselves. Lyons’ proposed choice is between thought conditioning language or language conditioning thought, while Jones’ proposed choice is between a subconscious conditioning of language and the world or the reflection of the oppositions of the outside world in language.

Although, after having expressed the difficulty of answering this question, Jones does say later that: “Language reflects the urge we have to dissect, an urge which may be related to the fact that we are all either female or male”, which seems to point to language reflecting, or in some way being caused by, natural oppositions in the world; and also that: “Humans seem prone to organise the world in terms of oppositions; antonymy is simply a linguistic reflection of this”, which seems to point to the subconscious conditioning of language and the world (Jones, 2002, p. 169). So it seems that Jones might be undecided or even confused about the answer to the question. However, it is difficult to determine exactly what was meant by these linguists, given that they say very little that is clear about this difficult philosophical problem.

Jones and his co-authors briefly return to this problem in their later work. Referring to the quotation from Lyons' 1977 work above they say that:

Lyons does not express an opinion about whether oppositeness in the linguistic system is caused by a universal dichotomizing tendency or whether it is due to the pre-existence of a large number of opposed lexemes in language [...]. (Jones et al., 2012, p. 7)

This is certainly an accurate reading of the quoted passage. However, later in the same work Lyons does mention an alternative view:

[...] it may well be that our understanding, not only of directional opposition, but of opposition in general, is based upon some kind of analogical extension of distinctions which we first learn to apply with respect to our own orientation and the location or locomotion of other objects in the external world. (Lyons, 1977, p. 282)

This is a thesis that Lyons calls 'Localism', which he explains further in the second volume of his work:

Spatial expressions are linguistically more basic, according to the localists, in that they serve as structural templates, as it were, for other expressions; and the reason why this should be so, it is plausibly suggested by psychologists, is that spatial organization is of central importance in human cognition. (Lyons, 1977, p. 718)

As such, the antonymy involved in our language, and logical relations, are held by localists to be derived primarily from the spatial oppositions in "the external world". The problem with this position is that it remains philosophically naïve about the status and origin of those spatial oppositions. In other words, if we were to ask another question analogous to the ones posed above regarding linguistic antonymy, one which is about the origin of these (meta)physical dualities i.e., the spatial oppositions of 'the outside world', it could not itself be answered by resorting to localism. I am inclined not to accept this position as a solution to the problem both for the reason I have just given i.e., that it merely pushes the problem back to a question about the status and origin of opposition in the world, and because it seems to be based on a psychologistic view of meaning.

A similar problem has been recognised by researchers in closely related fields, such as semiotics. In a 2009 article, Marcel Danesi examines what he calls 'the theory

of opposition', which he considers to be "the founding principle of structuralism in semiotics, linguistics, psychology, and anthropology" (Danesi, 2009, p. 11). He states his purpose in this article thus:

My purpose here is to revisit opposition theory as theory of language, mind, and culture, extending it as well to the domain of cognitive linguistic theory. The theory can, moreover, be seen to raise such fundamental semiotic questions as: Are human codes interconnected to each other through oppositional structure? Does such structure exist in reality or is it projected onto reality by the human mind? Is human cognition itself oppositional, as reflected in the fact that the brain has two hemispheres that process information in a complementary binary fashion? (Danesi, 2009, p. 12)

Danesi has high hopes that an extension of opposition theory, to take account of recent forms research in semiotics and linguistics, will help to answer fundamental questions, such as these three, concretely. However, it is clear that he does not accomplish this difficult task within the confines of his treatment of it in the article; given that, by the conclusion of his examination, the most fundamental question still remains:

But perhaps the most fundamental question of all that such a revitalized structuralism begs is the following one. Since oppositional concepts have existed across time and across cultures to encode some of the most metaphysically important questions humans have devised, is oppositional structure in the world or in the mind? In other words, do we understand the world in oppositional terms because we ourselves are structured to do exactly that and, thus, are blocked from ever really understanding the true nature of reality? Or is the world itself oppositional in structure and all we are doing is discovering how this is so? (Danesi, 2009, p. 35).

Here, Danesi is singling-out the second of the three questions from the introduction to his article i.e., "Does such [oppositional] structure exist in reality or is it projected onto reality by the human mind?", phrased in the conclusion as: "[...] is oppositional structure in the world or in the mind?", as being the most fundamental for any future revitalised structuralism or theory of opposition. He then proposes what I take to be two answers to the question in the form of rhetorical questions: (i) We are ourselves structured in such a way that we understand the world as being structured in oppositional terms when it is not (or at least we cannot know if it is); (ii) The world is itself oppositional in structure and that is why we understand it as such. We should

perhaps add here that Danesi seems to believe that oppositional structure is specific to human semiosis or, at least, that it is not a feature of semiosis in all species, while pointing out that other researchers, such as Winfried Nöth, may argue differently (Danesi, 2009, p. 35).

There are a number of other recent examples of researchers who have come across the problem, two of which I shall mention merely for completeness, given that I do not find what they have to say to be very rigorous or convincing. Scott Kelso and David Engstrøm who are researchers in 'Coordination Dynamics' (especially in computational neuroscience), take their research to be fundamentally important for what they call 'the philosophy of complementary pairs'. They also ask their own versions of the questions we have been discussing and, similarly to the practice of the psychologists, use the terms 'contrary' and 'contrariety' (confusingly) to refer to all dualities:

1) Why do human beings routinely divide their world into contraries? 2) Why are contraries so often interpreted as being mutually exclusive, either/or dichotomies such as whole versus part, self versus other, body versus mind, nature versus nurture? 3) What is the ultimate nature of contraries and contrariety? Are contraries physical phenomena, mental phenomena, or somehow both? Pauli eloquently anticipated the position we support (Kelso & Engstrøm, 2006; Kelso & Tognoli, 2007; Pauli, 1994).

"To us the only acceptable point of view appears to be one that recognizes both sides of reality—the quantitative and qualitative, the physical and the psychical—as compatible with each other. It would be most satisfactory of all if physics and psyche could be seen as complementary aspects of the same reality." (Engstrøm & Kelso, 2008, p. 122)

Question 2 above, can be flatly answered in the following way: 'Because they often *are* mutually exclusive, either/or dichotomies!' There is not much more to say to it than this, except perhaps to ask for evidence, be it empirical or otherwise, of some alternative possibility.

Perhaps the most disconcerting facet of what Kelso and Engstrøm call their 'philosophy of complementary pairs' is their use of the word 'complementary' (following Pauli), given that it does not carry the sense of an extensional or intensional complement, as was described earlier in this chapter in relation to ungradable antonymy, but means something more like 'friendly'. I find this similar to a situation that we discussed in the first part of this thesis, that of Anaximander and

Homer wishing that the strife of opposites would end, which is a suggestion that Heraclitus found to be entirely nonsensical and, indeed, not something someone should wish for, given that this very strife is what sustains the world. This tendency to see opposition as some kind of cosmic travesty is, I think, a symptom of the kind of 'New Age' rhetoric that creeps into the literature on Duality. However, it is almost entirely impotent and relies more on references to religious traditions than on philosophical argument. In fact, in this case, it is difficult to find a single cogent philosophical argument in the work of Kelso and Engstrøm, their main work on the topic consisting mostly of notable quotations from authors far and wide and containing little analysis of the actual philosophical problems.⁸⁹

⁸⁹ As a brief indication of the style and content of this work I include the following quotation from the preface of their book, in which they are fervently concerned with typographical matters at the neglect of semantics and lexicography: "The Complementary Nature introduces a new meaning and application of the tilde, or "squiggle" character (~), as in yin~yang, body~mind, individual~collective. We think the squiggle has the potential of going the way of the @ symbol; in fact, we think the whole notion of the complementary pair has the potential of becoming a new kind of word association, like the synonym and the antonym, that may someday find its way into dictionaries. Unlike the hyphen, the squiggle does not represent a simple concatenation of words, but rather indicates the inextricable complementary relationship between them" (Kelso & Engstrøm, 2006, pp. xiv-xv). What they are attempting to put forward here is never explained in any straightforward way.

CHAPTER 5: Antonymy and the Semantic Theory of Katz

Abstract of Chapter 5

In this chapter, I want to attend to the problems identified in the previous chapter, regarding the definition of antonymy in terms of logical opposition (meaning postulates), and to discuss the work of Katz on this issue. To explicate and extrapolate upon the treatment of antonymy in Katz' semantic theory. To draw out the implicit parallel with certain aspects of Heraclitus' philosophy, which were discussed in the first part of the thesis.

I begin by discussing the semantic theory of Katz and his arguments against the *meaning postulate* approach to defining semantic properties and relations. I then apply these arguments to the case of antonymy and, in particular, the meaning postulate approach put forward by Carnap, which was outlined in Chapter 4. I then explicate Katz' own treatment of antonymy within his semantic theory, and show how this theory provides definitions for the main kinds of antonymy that were discussed in Chapter 4. Katz does not explicitly provide definitions for all of these kinds of antonymy; and, where he does not do so, I extrapolate from what he says about his semantic theory in order to show how it is able to provide a basis for such definitions. I then discuss the implicit parallel between Heraclitus' *hypotactic* metaphysics and his reaction to the naïve metaphysics, and Katz' decompositional semantics and his reaction to extensionally based approaches to semantics, such as that of meaning postulates.

I shall argue that a decompositional semantics is required to define the notion of antonymy, and that Katz' semantic theory is capable of providing semantic definitions for the main kinds of antonymy. I shall also show that there is a parallel between Heraclitus' rejection of naïve metaphysics and Katz' rejection of meaning postulates, and that both of their resultant views depend upon hypotactic or decompositional structure.

The thrust of much of the argumentation in this chapter is directed toward the thesis that a decompositional semantics, such as Katz' semantic theory, is required to define the semantic relation of antonymy (and indeed, the other semantic properties and relations). This is shown first, negatively, through arguments against a primarily

extensional approach to semantics, and arguments against the use of such an approach to define antonymy and its kinds, and then, positively, by way of an explication of how an intensional and decompositional semantic theory, such as that put forward by Katz, is able to define antonymy and its main kinds.

The implicit parallel between what is treated of in the first part of this thesis and what is treated of in the second part, is drawn out largely in view of what has been concluded earlier in the thesis regarding these two topics. This section of the chapter merely allows for the opportunity to examine the two situations alongside each other, and draw out the similarity between them.

§1 An introduction to Katz' criticisms of meaning postulates

A *meaning postulate* is a logical device that was introduced by Rudolf Carnap, specifically as a method of expressing the relations between items of the extralogical vocabulary of a formal language. Katz and Nagel explain, in their paper from 1974, 'Meaning Postulates and Semantic Theory', that:

Meaning postulates are the axioms for items in the extralogical vocabulary of an interpreted formal system. They correspond to axioms (like Pierce's law) for the particles in the logical vocabulary. They are customarily presented in the form of universally quantified conditionals, that is, $[(x)(A \rightarrow B)]$, with A and B containing free occurrences of x . (Katz & Nagel, 1974, p. 316)

Katz provides us with a number of elucidations that show that the meaning postulate approach is not adequate for the task of defining analyticity or, more broadly, semantic properties and relations in natural language. He presents the relationship between natural and artificial languages as being that of an ever increasing approximation of representation. This can be explicated in the following way: In a propositional calculus, inferences at the level of propositions can be captured. For example, by disjunction introduction, 'P \vee Q' can be inferred from 'P'; or, by double negation elimination, ' $\neg\neg P$ ' entails 'P'. However, if we wanted to represent an inference that involves quantifiers, such as, 'Someone is a bachelor.' entails 'Not everyone is not a bachelor.', this could not be accomplished in a propositional calculus, because it cannot represent the relationship between these propositions in anything but an invalid form, e.g., 'P' entails 'Q'. However, this can be represented in a

quantified predicate calculus as $\exists x(Bx)$ entails $\neg\forall x(\neg Bx)$, due to the embedded rules of quantifier exchange that are part of the calculus and are able to represent this quantificational structure (Katz, 1972, p. 187).

Analogously, one cannot represent the (semantic) inference from 'a is a bachelor.' to 'a is male.' in a predicate calculus, because it could only take an invalid form, e.g., 'Ba' entails 'Ma'. Meaning postulates are employed as a loophole in order to avoid this lack of expressive power, but without going beyond the resources of the predicate calculus. We simply stipulate, using a meaning postulate, that $\forall x(Bx \rightarrow Mx)$, where 'B' stands for 'bachelor' and 'M' stands for 'male', in order to guarantee that we can construct a valid inference such that: 'Ba', $\forall x(Bx \rightarrow Mx)$ entails 'Ma'. However, as Katz notes bluntly, "this move accomplishes nothing, simply because it is totally ad hoc." (Katz, 1972, p. 185).

Katz exposes the ad hoc nature of meaning postulates again in some of his later works, by applying the same approach to an analogous invalid form, but this time one in the propositional calculus, given that it relies on an analysis in terms of a quantified predicate calculus. He uses the example 'If all horses are animals, then all heads of horses are heads of animals'. Now, if we simply assign to the antecedent the name 'S₁', say, and to the consequent 'S₂', and stipulate the postulate that $S_1 \rightarrow S_2$, then the inference from 'S₁', $S_1 \rightarrow S_2$ to 'S₂' is a valid one in the propositional calculus. However, it is quite obvious that this does not explain *why* the original inference is valid, because the validity derives from the fact that it has merely been stipulated to be so as an axiom within a representation in terms of the language of propositional calculus. There is nothing about the structure of the kind of representation, the propositional calculus, which necessitates this inference. That is, it is not a case of a representation of an entailment with the same status as that of 'P' entails 'P \vee Q' in the propositional calculus, or that of the example of the rules of quantifier exchange used in the predicate calculus above (Katz, 1977a, p. 397; Katz, 1988, pp. 67–8). As such, it is an example of what could be said to be predicate logic conducted without the employment of a predicate calculus. Katz expresses the absurdity of this proposal thus:

Of course, such a proposal to render quantification theory otiose is absurd. The reason is clear. A meaning-postulate account of valid quantificational inferences is no substitute for a proper quantificational account, because the former offers no analysis of quantificational structure to explain the source of their validity. (Katz, 1988, p. 68)

Katz argues that this situation is analogous to Carnap's use of meaning postulates to import into quantified predicate calculus what are properly representations of entailments based on an underlying decompositional sense structure, such as that which is provided by his own semantic theory.

To reiterate this point, although it is perfectly possible to represent these semantic entailments as valid arguments in a predicate calculus with the aid of meaning postulates, given that they are nonetheless "logical implications in the broad sense (the conclusion can never be false when the premisses are true)" (Katz, 1977a, p. 397), this is not enough to show that the predicate calculus has sufficient representational power to account for the structure on which these semantic entailments depend; in a similar fashion, the argument above is not enough to show that the propositional calculus has sufficient representational power to account for the structure necessary for the inference from 'All horses are animals' to 'All heads of horses are heads of animals', although it is still able to represent this as an argument in a valid form with the aid of postulates. So, just as predicate logic can be conducted without the employment of a predicate calculus, representations of semantic entailments can be produced without a semantic theory; however, just as in the former case, in the latter the approach does not remove the need for this further level of theoretical explanation. Katz' argument is intended to show that semantic entailments should be explained using a semantic theory that has the power to account for the relevant sense properties and relations, through a representation of the decomposition of predicates and terms into their component senses and structure.

Katz' arguments are inspired by those of Quine against such semantical rules and meaning postulates employed by Carnap. However, Katz does not share Quine's extensional view of semantics and argues that, although the latter's criticisms hold against Carnap's "conservative" intensionalism (conservative in the sense of still being grounded in an extensional manner) (Katz & Nagel, 1974, p. 334), they do not hold against his own brand of intensional semantic theory (Katz & Nagel, 1974, p. 336). Katz identifies two main criticisms contained in Quine's arguments, which he calls the *generality criticism* and the *explanation criticism*. The *generality criticism* is essentially that Carnap's meaning postulates do not define the notion of analyticity in general, but can only purport to do so for a specific language. As such, they do not

define the required notion of 'S is analytic for L', for variable sentence 'S' and language 'L'. This is due to the fact that, in each meaning postulate that is stipulated, each of the predicate letters employed represents only a particular extra-logical expression of a particular language, and there is no available procedure of generalisation to other languages. A version of the *explanation criticism* has already been presented above in the form of Katz' own argument regarding semantic entailment, showing the ad hoc nature of Carnap's method. It is the criticism that, although Carnap's method specifies the analytic sentences for the language in question, it does not say what specifying them as being 'analytic' amounts to; i.e, it is not an explanation of the notion of analyticity (Katz, 1972, pp. 246–8; Katz & Nagel, 1974, pp. 335–6). In his article, 'Two Dogmas of Empiricism', Quine puts these criticisms as follows:

The rules tell us that such and such statements, and only those, are the analytic statements of L_0 . Now here the difficulty is simply that the rules contain the word 'analytic', which we do not understand! We understand what expressions the rules attribute analyticity to, but we do not understand what the rules attribute to those expressions. In short, before we can understand a rule which begins "A statement S is analytic for language L_0 if and only if...", we must understand the general relative term 'analytic for'; we must understand ' S is analytic for L ' where ' S ' and ' L ' are variables.

Alternatively we may, indeed, view the so-called rule as a conventional definition of a new simple symbol 'analytic-for- L_0 ', which might better be written untendentiously as ' K ' so as not to seem to throw light on the interesting word 'analytic'. (Quine, 1951, p. 32)

These criticisms of the meaning postulate approach will not come as a great surprise to those who have experience of ancient philosophy. This is a piece of wisdom that has a long history, given that similar constraints to these can be found also in the early dialogues of Plato (cf. Politis, 2015, Chapter II); indeed, Katz himself notes this similarity in some of his later works, when he says, "Like Socrates's interlocutors, meaning postulates offer examples of the concept instead of the concept itself" (Katz, 2004, p. 155; cf. Katz, 1998, p. 553). The essence of the point is this: In order for a definition to be explanatory it is necessary (but not sufficient) that it be general and

unitary or, stated differently, if a definition is explanatory, then this is sufficient for its also being general and unitary.⁹⁰

For our purposes, we are not directly concerned with the notion of analyticity, but instead with the notion of antonymy. Katz notes that the above problems with the account of analyticity and meaning given in terms of meaning postulates are “symptomatic” of similar problems to do with explaining the other sense properties and relations, some of which can be seen to underlie analyticity; Katz puts this thus:

Since the other sense properties and relations depend on decompositional sense structure every bit as much as analyticity, the failure of meaning postulates in the case of analyticity ought to be symptomatic of a general failure of meaning postulates to explain sense properties and relations. (Katz, 1992a, p. 703)

Katz considers the question of what analyticity is to be one of many sub-questions, the answers to which are presupposed for an answer to the question ‘What is meaning?’ (Katz, 1972, pp. 4–6); another one of these sub-questions is ‘What is antonymy?’ Some differences between the phenomena that are the subjects of these questions should be noted: Analyticity is a semantic property of the sense of a sentence in relation to a language, while antonymy is a semantic relation between the senses of sub-sentential expressions of a language. As such, and by analogy with the treatment of analyticity above, the notion of antonymy to be defined must be ‘X and Y are antonymous for L’ where ‘X’ and ‘Y’ are variable sub-sentential expressions and ‘L’ is a variable language. Katz notes that antonymous sense structures, which he calls *antonymous n-tuples* (also giving the name “*antonymy sets*” to infinite such collections, cf. Katz, 1972, p. 312), are a more basic semantic notion than that of analyticity,⁹¹ given that they are necessarily involved in some analytic propositions (and, indeed, contradictions); for example, ‘Red is not Blue’ and ‘Uncles are not female’. That is to say, if there was no such sense relation as antonymy in a language,

⁹⁰ The generality criticism contains both (i) the demand for the definition to be general, that is, not given in terms of a particular exemplar but, rather, in terms of a general property or set of properties, and (ii) that it be unitary, that is, that the property being defined is non-disjunctive and covers all instances. In this specific situation, this means that (i) the definition cannot proceed by appealing to a particular exemplar of an analytic sentence (or, indeed, many of them), and (ii) that the property of analyticity to be defined is not just that for a particular language, but for language in general, and not in a manner that is merely a conjunction of all of the multifarious kinds together.

⁹¹ The other main kind of sense structure that Katz describes as being “below the level of syntactic simples” is that of subordination/superordination (Katz, 1992b, p. 132; cf. Katz, 1988, pp. 82–3), which we shall discuss again later in relation to antonymy, and in comparison with Heraclitus’ *hypotactic* metaphysics.

then sentences like these could not be considered to be analytic, at least in the sense that Katz means. Indeed, considering a situation in which the senses of these sentences lack the involvement of any antonymy, shows what an important component of meaning antonymy is; that is, attempting to consider the anomalous meaning of 'Uncle' such that its sense would contain no antonymous relation to the sense of 'female', or, perhaps even more difficult to imagine, the meaning of 'Red' such that it would not necessarily exclude the meaning of 'Blue'.

§2 Some arguments against defining antonymy by way of meaning postulates

In 1977, Katz made the following sociological observation regarding the entrenchment of Carnap's conservative intensionalism and, in particular, the use of predicate calculus as means of representing the semantics of natural languages:

Carnap's theory is not only the current orthodoxy for philosophers who do not subscribe to Quinian skepticism about meaning but it is becoming the hottest bandwagon for linguists of all persuasions. To say, at the present time, that it is widely believed that semantic representations of sentences from natural languages are formulas in some predicate calculus would be extreme understatement. The achievements of modern logic in the study of implication in artificial languages are impressive, and philosophers and linguists, impressed with them, have based their ideas about semantic representation on such artificial languages. Thus, the assumption that semantic representations of sentences in natural languages ought to be written as formulas of some predicate calculus is now a truism, serving theorists of otherwise rival persuasions as a common means of characterizing the problem of semantic description for natural languages in its most general form. (Katz, 1977a, p. 381)

Indeed, this 'truism' is connected to the one that is still encountered to this day by undergraduate students of logic upon their first introduction to the translation of arguments in natural language into the formal language of predicate calculus; for example, when they are asked to consider the logical form of an argument independently of the meanings of the ('extra-logical') words contained in the sentences of the argument, often against their own initial best intuitions regarding the status of the validity of such arguments and the idiosyncratic importance of each of the words contained therein. The situation described above by Katz is one in

which, in addition to this, the semantic properties of, and relations between these words are also represented solely in terms of the logical relations contained in the axioms in which these words feature.

The method of defining semantic relations in terms of logical relations by way of meaning postulates has continued long after Katz' observation that this method is not entirely adequate for its purpose. This has been noted by the linguist Lynne Murphy (2003), thus:

While meaning postulates are regularly employed in model-theoretic semantics, it has been repeatedly pointed out that the postulates explain nothing about relations among meanings (e.g., Katz 1972; Lakoff 1972). Since the only "meanings" involved are extensional sets, meaning postulates essentially express relations among things (i.e., the denoted things in the words' extensions) rather than among words or word senses. Furthermore, they simply assert those relations – they do not explain why certain relations (and not others) hold between certain expressions. (Murphy, 2003, p. 64)

Indeed, while it still appears to be the method favoured by linguists working in formal semantics, linguists working outside of the formal setting complain of a difficulty in defining semantic relations such as antonymy, and often merely repeat the logical distinctions between the different sub-categories of such relations without the aid of a logical calculus. In Chapter 4, we discussed one example of the formal method of defining antonymy in terms of meaning postulates, which was presented by Ronnie Cann in his 1993 work *Formal Semantics*. Let us now consider Cann's use of meaning postulates to define antonymy, in light of the decisive criticisms proposed by Katz and Quine that were outlined earlier.

If we wish to represent a semantic entailment that is based on the antonymy between the meanings of (extra-logical) words contained in two sentences, this will not be possible in an unmodified predicate calculus given that the representation could only take an invalid form. Consider the example, 'The cat is dead' entails 'The cat is not alive', which has the invalid form: 'Dc' entails '¬Ac', where 'D' stands for 'Dead', 'A' for 'Alive', and 'c' for a particular cat. This can be represented as a valid inference in the predicate calculus if we stipulate, as an axiom of the language, the meaning postulate that represents the antonymy (complementarity) between the meanings of 'Dead' and 'Alive', i.e., ' $\forall x [(D(x) \rightarrow \neg A(x)) \ \& \ (\neg D(x) \rightarrow A(x))]$ '. Given this meaning postulate, it is then possible to represent the entailment as an argument of

the following form: 'Dc', ' $\forall x(D(x) \rightarrow \neg A(x))$ ' entails ' $\neg Ac$ '. However, this meaning postulate approach does not explain *why* the meanings of 'Dead' and 'Alive' are antonymous and thereby lead to the validity of this representation as such, any more than this approach did for Katz' example regarding the analyticity of 'Bachelors are male'; rather, it merely stipulates that they are so related.

It is clear, extrapolating from the above example, that similar instances can be constructed for Cann's other definitions that rely on meaning postulates, and that they would be vulnerable to analogous argumentation. As such, Cann's definitions of antonymy succumb to Katz's version of the *explanatory criticism* for the same reasons that the definition of analyticity did earlier, i.e., because they are "totally ad hoc", in the relevant manner. Similarly, although the meaning postulates corresponding to Cann's schemata may specify the antonymous expressions for the language in question, they do not say what specifying them as being 'antonymous' amounts to; i.e, it is not an explanation of the notion of antonymy.

Moreover, whilst I have derived the above argument through an analogy with Katz's examination of analyticity, Katz himself does provide a rare example of direct criticism of the use of meaning postulates to explain antonymy. In his article 'The New Intensionalism' from 1992,⁹² he presents an argument that is independent to the one given above. For the purposes of this argument, he first provides the following two lists of antonyms: (i) "blind/having sight, orphaned/having a living parent, amorphous/having definite form"; (ii) "red/blue, happy/sad, odd/even". Katz points out that the antonyms in (i) are privative, that is, the sense of the first term is that of a lack of a feature included in the sense of the second term of each pair, whereas the antonyms in (ii) are not privative. Given that his original argument is quite clear and succinct I shall reproduce it in full below:

[...] in so far as the meaning postulate approach accounts for the antonym pairs in both [i] and [ii] on the basis of postulates of the form " $(\forall x)(F(x) \rightarrow \neg G(x))$ ", it cannot explicate the fact that the pairs in [i] are privation/possession relations while those in [ii] are not. Given nothing more than an assignment of the same extensional structure to the antonym pairs in both cases, there is no means of accounting for the fact that the pairs in [i], but not those in [ii], are asymmetrical with respect to negation —one member of the former pairs, e.g., "blind", but not "having sight", being a privation term, is inherently negative but otherwise the same in

⁹² This is, to my knowledge, the only text in which Katz makes a direct reference to the very same kind of meaning postulates that are used in attempts to define antonymy, and addresses such definitions.

content as the other term. To distinguish the privation/possession antonyms like [i] from antonyms like [ii] and to predict which member of the pairs in [i] is a privation term, it is necessary to refer to decompositional sense structure.

The inexpressibility of the asymmetry is particularly clear when it is necessary, as it is in cases like the last pairs in [i] and [ii], to represent the antonyms with a biconditional. The equivalence of “ $(\forall x)(\neg F(x) \leftrightarrow G(x))$ ” and “ $(\forall x)(F(x) \leftrightarrow \neg G(x))$ ” thus leads to the false claim that antonyms of both kinds are symmetrical with respect to negation. (Katz, 1992a, p. 704)

This argument features instances of meaning postulate schemata that match those given in our presentation of Cann’s account of antonymy in Chapter 4, specifically those that were given for the general ‘Opposites’ relation and the ‘Complementaries’ relation. Katz’ argument makes two decisive criticisms of meaning postulates: First, that a distinction between those kinds of antonymy relations that are privative and those that are not, cannot be made in terms of the usual meaning postulates, given that these relations must both be represented by the same kind of postulate and, therefore, no difference can be represented in this regard. Second, in the case of the privative antonyms, a theory given in terms of meaning postulates will be unable to predict which of the two terms is negative (privative) and which is positive (possessive). Only a theory that can give an account of the decompositional sense structure of these terms and is able to reveal an underlying negative element will be able to do this.

There is another important difference between the meaning postulate approach to antonymy and the decompositional approach, which should be noted, but which seems to have gone largely unnoticed in the literature regarding the general discussion and comparison of these systems.⁹³ This is a difference that comes to the fore especially when antonymy is the kind of relation being considered. Although meaning postulates provide definitions of incompatibility relations between predicates in the language, as were presented in the case of Cann’s system in Chapter 4, these definitions do not themselves make reference to the predicates of the language that are superordinate to the opposed predicates. That is, subordination and *hypotactic* structure are treated as being extraneous to the definition of antonymy by the meaning postulate approach.

⁹³ There is, however, at least one exception, that is, in an article by David Pitt (Pitt, 1999, p. 146). Pitt is also a former student of Katz.

This is not to say that the relations of sub- and super-ordination, hyponymy and hyperonymy, between senses of expressions are not themselves captured by other meaning postulates for the language, rather, that they have nothing to contribute to the definition of antonymy. One could conceive of a conjunction of all the meaning postulates for a single expression of the language, which would thereby give us a complete definition of the expression and the basis from which all the inferential relations involving that expression could be derived; however, even when presented in this manner, the conjunct(s) that define the subordination relations have nothing to do with the conjunct(s) that define the opposition of the expression to its opposite(s), that is, they have nothing to do with antonymy relations beyond merely involving the same predicate. As such, the linguists' intuitive conception of antonymy, as being a relation between 'incompatible co-hyponyms', is not captured by the meaning postulate approach as being an inherent feature of antonymy, but rather as a mere coincidence of relations based on postulates, which may not always be the case. Indeed, this is the case for Cann's system presented in Chapter 4; recall that Cann mentioned that 'tulip' and 'rose' were "opposites", in the sense of being "incompatible co-hyponyms" of 'flower' (Cann, 1993, p. 218). However, on the basis of Cann's system of formal representation, this can only be explained as being a mere coincidence and a contingent fact about the sense relations between particular English words. There is nothing about Cann's definition of the antonymous relationship between 'tulip' and 'rose' that necessarily involves them being co-hyponyms of a common superordinate term 'flower'.

Thus, there is a noticeably marked difference here between a meaning postulate approach and a decompositional approach such as the one employed by Katz, in which the sense structure that underlies antonymy is inherently bound-up with the sense structure that underlies hyponymy. Indeed, as we shall see later when we discuss *the colour incompatibility problem*, if it were not for this relationship between these two kinds of sense structure, then the semantic theory would be unable to avoid a commitment to the direct containment of the disjunction of all the negations of the senses of an expression's antonyms, within the sense of that expression, and this would result in the failure of the theory. I will give a fuller account of the reasons for this later.

Even if one was to put up a spirited defence to the above criticisms on behalf of the meaning postulate approach, we would still be left with the basic issue that

was mentioned at the beginning of this section, which is that meaning postulates do not relate meanings beyond relating the extensions of words, that is, sets of things, individuals in the world. The problem here is that this does not seem to be sufficient to ground the notion of antonymy or, for that matter, opposition in the world. Consider the following example that was also mentioned earlier, of the converse opposition between 'left (of)' and 'right (of)'. In Carnap's system, the complete meaning postulate for this relationship is a conjunction of the postulates for converseness with one for dyadic 'oppositeness': $\forall x \forall y ((L'(y)(x) \leftrightarrow R'(x)(y)) \& (L'(y)(x) \rightarrow \neg R'(y)(x)))$. This says that for all things, if there is a thing that is to the left of another thing, then that other thing is to the right of it, and if there is a thing that is to the left of another thing, then it must not also be to the right of it (and vice versa). This statement is supposed to define part of the meanings of the words 'left' and 'right', but it is not clear that this is possible to achieve in this way. Consider the following possibility: that all the things in the world that are on the left of other things in the world, changed position with these other things, that is, the things on their right. Now, would anything about the meaning of 'left' and 'right' have changed? It appears that the extensionalist would have to answer in the affirmative, since the only meanings recognised by them are extensional sets and these sets must now be in an exactly inverted configuration to that which they were in previously; that is, the 'meanings' of 'left' and 'right' must have changed and indeed, changed into one another. However, it is not clear that this is semantically adequate, because we would then have to speak as if nothing had changed at all when indeed quite a number of things had done so.

Another important consequence of the extensionalist view of opposition, and the meaning postulate approach that embodies it, is one that was implicitly pointed out in the metaphysics of the mediaeval scholastic philosopher John Duns Scotus.⁹⁴ One version of his argument goes as follows:

⁹⁴ I am indebted to Dónall McGinley for drawing my attention to this argument, during his presentation at the Dublin Graduate Philosophy Conference, on 'Duality and Opposition', at Trinity College Dublin, on the 30th of March 2014. I was the principal organiser of this conference. His paper was entitled 'John Duns Scotus on the Reality of Opposition'. Another version of the argument appears in Duns Scotus, *Ordinatio*, II d. 3, q. 1, n. 19. For a further exposition of Scotus' views, and a defence of his theory of common natures against the objections of William of Ockham, see McGinley's forthcoming doctoral thesis on the topic.

In any opposition there are two primary extremes, both of which are real if the opposition is real. Now contrariety represents a real opposition, for heat destroys cold apart from any thinking about it. Each of the opposite extremes, therefore, is something real and is one by a real unity. This real unity, however, is not numerical unity, because then there would be as many primary contraries as there are individual contrary extremes; therefore there must be some unity in the extremes that is real in itself that is other than numerical unity. (Scotus, 2005, *Lectura* II d. 3, q. 1, n. 22)

The point here is that if we take oppositions to be between things, that is, if we take the relata of oppositions to be merely numerical unities, individuals in the world, then this would lead to the unpalatable consequence that there would be as many relata of the opposition as there would be individuals opposed. Put in a more relational way, there would be (at least) as many distinct relations of contrariety as there would be individuals opposed (given that there are more than two).⁹⁵ So, the opposition between this hot thing and that cold thing would be different to the opposition between this same hot thing and some other cold thing. This is opposed to what could be construed as an intensional explanation in which the opposition is instead not between the individual hot and cold things but rather, in Scotus' case, between hot and cold as common natures that are common to the hot and cold individuals.

This implicit criticism of an extensionalist approach to antonymy, and indeed to (nonexpressional) sense relations and properties in general, is also, embodied in a similar criticism put forward by Katz in his work *The Metaphysics of Meaning*. Katz here gives a partial formalisation of what he calls the 'Fregean view' of semantics, in terms of numerals. That is, a list of the "atomic symbols representing the senses of the syntactic simples of the language (i.e., the morphemes)" (Katz, 1992b, p. 62). The symbols that Katz' chooses for the purposes of illustration are the natural numbers from '1' to 'n', but I take it that the point is that any set of symbols that stand for *numerical unities* would be apposite for the purposes of the argument. Katz notes that this system is able to pick out instances of what he calls the *expressional* sense properties, that is, those properties that are predicable of particular expressions, such as, being meaningful, lacking meaning, and being ambiguous. Expressional

⁹⁵ Duns Scotus presents it in this way in *Ordinatio*, II d. 3, q. 1, n. 19. The consequence of numerical unity is there stated as: "then there would be as many primary contrarieties as there are individual contraries." That is, this consequence refers to the proliferation of relations, rather than their relata. However, both statements are expressing what is the same consequence, but in different ways.

properties primarily rely on a count of the senses of those expressions. Being meaningful is a property of expressions having at least one sense, while meaningless expressions lack sense, and being ambiguous is a property of expressions with more than one sense. It would be nonsense to attribute these properties to the senses themselves, which would be to say that a sense itself has or lacks one or more senses, that is, e.g., that a sense is meaningful or not, or that a sense itself is ambiguous.

According to Katz, although the Fregean style system is able to deal with *expressional* sense properties, it is unable to deal with most of the *nonexpressional* sense properties and relations. That is, it is unable to deal with the properties and relations that hold of, and between, senses themselves, and thereby only indirectly of expressions. This is because, in particular, in cases of analyticity, redundancy, and synonymy, these properties and relations can only be attributed by the system when the same numerals are given as semantic interpretations of the expressions. For example, in expressions with a redundant sense like “a woman who is a woman”, but not in expressions like “a woman who is a female”, which, from the perspective of the system’s attribution of semantic properties, would be no different from the non-redundant sense of an expression like “a woman who is frail” (Katz, 1992b, pp. 63–4). The case of the relation of antonymy is particularly striking because, in contrast to the redundancy of “a woman who is a woman”, there would seem to be no cases that are adequately handled by the system. Katz gives the following illustration of the failure of the Fregean style treatment of synonymy and antonymy:

The postulation of underlying sense structure is also required for a full account of synonymy and antonymy. That this is so can be seen from cases like the synonymy of “sister” and “female sibling” and the antonymy of “open” and “closed”. A numeral notation fails in the former case because these synonymous expressions will not be assigned the same numeral representation; it fails in the latter case because, although the antonymous expressions will be assigned distinct numeral representations, such representations will not be relevantly different from the distinct representations assigned to the merely non-synonymous expressions “open” and “destroy”. (Katz, 1992b, p. 65)

The point here is that, in terms of the numeral notation, antonymy cannot be distinguished from a mere difference of sense. That is, because all differences of sense become merely numerical differences they are all fundamentally of the same kind. As we have seen earlier, the meaning postulate approach introduced by Carnap

attempts to address this shortcoming by distinguishing between meanings that are merely different from each other and those that have some postulated relationship between them. However, this method also fails to take account of the underlying sense structure that is the basis of antonymy and the other sense properties and relations.

§3 Katz' decompositional semantic theory and the problem of antonymy

In this section I will discuss Katz' semantic theory and how he uses it to solve certain problems relating to antonymy. A complete and comprehensive examination of Katz' theory, including all of the modifications that have been made to it since 1963,⁹⁶ will not be possible here given that such an examination would extend far beyond the scope of this thesis.⁹⁷ As such, I will, in general, confine myself to a discussion of the aspects of his theory that relate to antonymy.

Although Katz had been discussing what I am calling here *the problem of antonymy* since around the time he published his book *The Metaphysics of Meaning* in 1990, he did not publish explicitly his exact solution to this problem, in terms of his semantic theory, until his 1998 article, to which he gave the somewhat grand title 'The Problem in Twentieth-Century Philosophy', and then again subsequently in his final work *Sense, Reference, and Philosophy*, which was posthumously published in 2004. The problem, which was addressed by Katz over this period, is a generalisation of the problem that Wittgenstein came to realise was left unresolved by the *Tractatus*. The particular instance of the problem that has its locus in the *Tractatus* is known as *the colour incompatibility problem*. Katz begins his discussion of the problem with the following quotation from the *Tractatus*:

It is clear that the logical product of two elementary propositions can neither be a tautology nor a contradiction. The statement that a point in the visual field has two different colours at the same time is a contradiction. (Wittgenstein, 1974, p. 86: 6.3751)

⁹⁶ The semantic theory employing semantic markers as representations of senses, has its origins in the seminal paper by Katz and Jerry Fodor from 1963, entitled 'The Structure of a Semantic Theory'.

⁹⁷ For an introduction to Katz' semantic theory, I would suggest his work *Semantic Theory* (1972) especially Chapters 1–4. A significantly condensed introduction to his theory can be found in his work *Propositional Structure and Illocutionary Force* (1977b), especially pp. 59–69.

When we consider this quotation together with a proposition such as “The spot is red and blue”, we come up against one of the problems that eventually led Wittgenstein to reject his early philosophy as presented in the *Tractatus*. The proposition is a conjunction of two elementary propositions, namely, “The spot is red” and “The spot is blue”, as such, and by the first sentence of Wittgenstein’s statement above, it cannot be a logical contradiction; however, by the second sentence of the statement above it is recognised intuitively that the conjunction is nevertheless contradictory.

In a review of the *Tractatus*, from 1923, Frank Ramsey pointed out that Wittgenstein’s attempt at handling this problem by appealing to a reduction in terms of physical theory does not succeed because “[...] Wittgenstein is only reducing the difficulty to that of the *necessary* properties of space, time, and matter or the ether” (Ramsey, 1923, p. 478). The reason that this cannot work is that the propositions that describe these physical necessities and impossibilities will themselves be of the same form as the original proposition, and will again fail to take the form of a logical contradiction, ‘p and not p’. Wittgenstein became dissatisfied with his original treatment of this problem in the *Tractatus*, and after various attempts at resolving it through, for example, the ad hoc modifications of the truth table system, which he introduced in the paper ‘Some Remarks on Logical Form’ from 1929, and others (cf. Monk, 2014, pp. 326–7), he abandoned any hope of finding a formal method for dealing with the problem. Wittgenstein eventually arrived at some notion of a use theory of meaning, that is, broadly speaking, a pragmatic approach as opposed to a formal semantic one. Carnap’s meaning postulates are another way out of the colour incompatibility problem, but as we saw earlier it is also an ad hoc method, and is confounded by many other difficulties.

The main issue for a decompositional semantic approach like Katz’ is that while the surface form of the sentences and their component expressions do not contain a negative element, the decompositional analysis of them must include such an element in order for a contradiction (or analyticity) to arise. This, however, is difficult given that we cannot simply say that the sense of ‘red’ contains the sense ‘not blue’ and *vice versa*, because the sense of ‘red’ would have to contain the senses of all the other colour terms also, in the form of, e.g., ‘not green’, ‘not yellow’, etc., in order to account for the sense properties of sentences involving these other colour terms (Katz, 1998, p. 564). However, this implies that the sense of ‘red’ would have to

contain the senses of all the other colour terms and, by parity of reasoning, this would lead to a vicious regress, for these senses themselves would also have to contain the senses of all the other colours; furthermore, this regress of senses would include multiple instances of senses of the form 'not red'; so, the original sense of 'red' would itself contain 'not red', which would make the system untenable. Problems such as these have led other philosophers to think that colour incompatibility statements such as "This spot is red and blue" and analytic statements like "Red is not blue" are instead synthetic. At the time of writing, Katz described this as the majority view (Katz, 1998, p. 564).

Katz' solution is quite brilliant, for it manages to link the senses of 'red' and 'blue' in such a way that avoids having the senses of the colour terms explicitly contained in each other. He accomplishes this through the use of four interlinked formal devices, which he calls the *antonymy operator*, *antonymous n-tuples*, *categorised variables*, and *selection restrictions*. The basis of Katz' solution to the problem is that these formal devices, which are already available to him in his semantic theory, allow him to make a distinction between the meaning of a word *in isolation* and the meaning of the word *in a sentence*. Katz explains this thus:

[...] the sense of a word in a sentence can have sense components which are not part of its sense as a lexical item but come into the latter from the senses of other constituents in the sentence. Compositionality makes the difference. Failing to note this, philosophers assimilate the case of words in a sentence to the case of words in isolation, thereby taking a genuine impossibility intuition about the latter to apply to the former, where it does not apply at all. (Katz, 1998, pp. 572–3)

I will now provide a brief exposition of the formal devices that Katz employs to implement this strategy. The first is the antonymy operator 'A/', which is analogous to the negation operator in logical calculi; the difference is that negation is an external operator that toggles the truth value of its argument, i.e., a proposition, from true to false or false to true, whereas the antonymy operator in Katz' semantic theory is an internal sense toggle that toggles from one sense to others within its *antonymous n-tuple*. There are further clauses to the definition of this operator but they are superfluous for our present purposes (cf. Katz, 1972, pp. 160–168). An *antonymous n-tuple* is simply a set of senses that all fall under a superordinate sense; so, the *antonymous n-tuple* that falls under the sense of 'colour' includes the senses of

'red', 'blue', 'green', etc. The colour senses are automatically grouped in this way in virtue of the fact that each of their representations in terms of the semantic theory, that is, what Katz' calls their *reading*, which is composed of what he calls *semantic markers* (which represent senses and their structure), contains the superordinate sense represented by the marker '(colour)'. This bracketed notation for semantic markers represents senses, which may or may not be complex and possessed of further internal sense structures.

Katz states the general form of an antonymous n -tuple as: " $(M^{(\alpha_1)}), (M^{(\alpha_2)}), \dots, (M^{(\alpha_n)})$ " (Katz, 1972, p. 52), where the semantic marker 'M' (in this context) represents the superordinate sense of each subordinate α , and he defines the notion of an *antonymous n -tuple* as follows:

Two semantic markers belong to the same antonymous n -tuple of semantic markers if and only if one has the form $(M^{(\alpha_i)})$ and the other has the form $(M^{(\alpha_j)})$, where $i \neq j$ and $1 \leq i \leq n$ and $1 \leq j \leq n$. (Katz, 1972, p. 52)⁹⁸

The next piece in the puzzle is the use that Katz makes of categorised variables and selection restrictions. A categorised variable, is a variable that awaits a semantic value given by another part of the reading of a sentence; they are categorised according to the functional notation of the syntactic theory being used. The variable is also given what is called a 'selection restriction', which constrains the selection of the semantic value, the sense, which will replace the variable. So, in terms of our current example, the selection restriction will be '<(colour)>', meaning that any semantic marker that is plugged in for the categorised variable must include the superordinate marker '(colour)'. Another way of saying this is that the sense must be one taken from the *antonymous n -tuple* of the colour senses. Categorised variables are notated in the following fashion:

[] & K
X
< >

⁹⁸ Katz extends the notion of an antonymous n -tuple to that of "*antonymy sets*", which are infinite such collections of markers, in particular for the purpose of representing relations between different times (cf. Katz, 1972, p. 312).

The square brackets include the functional syntactic notation that specifies a particular node of the underlying phrase marker for a sentence, for example, 'subject of' is represented as '[NP, S]'. It is the semantic reading (or a component thereof) of this node of the underlying phrase marker, which will be substituted for the variable in a derived reading for the sentence (or higher level constituent) as a whole. The notation following the square brackets, '& K', is an optional function that is used to specify that the variable should be filled by a more precisely determined semantic marker than that which is specified merely by being the semantic reading of a particular syntactic node in an underlying phrase marker. The angled brackets include the semantic selection restriction for the variable, e.g., '<(colour)>' in our present example.

We now have all of the components of Katz' solution in place. Although the sense of 'red' does not contain the sense of any other specific colour, it contains the sense of not being some other colour; that is, only some other colour (or colours) could replace the categorised variable when 'red' is involved in a sentence such as "Red is not blue". The rules of Katz' semantic theory would mark this sentence as being analytic, and a sentence like "The spot is red and blue" as being contradictory. Thus, according to this theory, this is not a situation that is synthetic and contingent but rather one that is necessary.

§4 The basis in Katz' semantic theory for definitions of the main kinds of antonymy

In the first two sections of this chapter I have argued against the use of meaning postulates for capturing the various antonymy relations in natural language. In this section I will show how Katz' semantic theory is able to provide adequate distinctions between the main kinds of antonymy relation that were described in the work of the linguists, which were outlined in Chapter 4, and again earlier in this chapter in the form of Cann's meaning postulate schemata. I wish to stress here that these distinctions will be wholly semantic, in Katz' sense, and will not address any of the pragmatic factors that many other linguists examine in their discussions of antonymy. The reason for this is that I wish to focus on those kinds of oppositions that have a real basis, to the extent that they do not rely on a particular context, convention, or the merely expressive aspects of language, and which are involved in

valid deductive arguments. This is what Katz refers to as being the “null context”, which he says is an idealization that is put forth “in the same spirit as Chomsky’s ideal speaker-hearer or the physicist’s perfect vacuum or frictionless plane” (Katz, 1977b, p. 14).

Some of the distinctions between the kinds of antonymy have been explicitly mentioned by Katz, while others remain only implicit in his semantic theory to some degree. First of all, before defining the kinds of antonymy, we should take note that Katz defines antonymy generally as follows:

Two constituents C_i and C_j are antonymous (on a sense) if and only if they are not full sentences and they have, respectively, readings R_i and R_j such that R_i is identical to R_j except that R_i contains a semantic marker (M_i) and R_j contains a semantic marker (M_j) and the semantic markers (M_i) and (M_j) are distinct members of the same antonymous n -tuple of semantic markers. (Katz, 1972, p. 52)

§4.1 Complementary and contrary antonymy

The first distinction that Katz’ semantic theory allows us to draw is the classical one between complementary antonymy and contrary antonymy. These are two of the three main kinds of antonymy that Katz explicitly recognises in his main technical work, *Semantic Theory*, from 1972. Katz’ calls them ‘Contradictories’ and ‘Contraries’, respectively. The third kind that he mentions is that of ‘Converses’, which we will return to later (Katz, 1972, p. 159).

Although Katz seems never to discuss this aspect of his theory, the distinction between these first two kinds of antonymy is one that arises, in a rather natural way, from the basis of each of these kinds of antonymy in *antonymous n-tuples* of differing structure. Put simply, when an antonymous n -tuple contains only two senses, the antonymy relation between those senses will be a complementary one. On the other hand, when an antonymous n -tuple contains more than two senses the antonymy relation between any two of those senses will be a contrary one. As such, there is no need for direct logical postulation of the differences between these two kinds of antonymy, given that the logical differences merely follow from the sense structure of the antonymous n -tuples and the application of the antonymy operator. That is, we do not need to state separate rules for each of these two kinds of antonymy, due to

the fact that, for the most part, they follow the very same rules. Instead, their differing logical properties arise from differences in their underlying sense structure.

Thus, the most basic distinction between these two kinds of antonymy is based simply on a count of the senses in an antonymous n-tuple. If there are two senses (represented by semantic markers) in an n-tuple, the application of the antonymy operator to one of them will return the other. If there are more than two senses in an n-tuple, then the application of the antonymy operator to one of them will return a disjunction of the other senses in the n-tuple. These two facts explain the logical properties of the two kinds of antonymy that were expressed in terms of Cann's meaning postulate system, outlined in Chapter 4, by " $\forall x [(X'(x) \rightarrow \sim Y'(x)) \& (\sim X'(x) \rightarrow Y'(x))]$ " and " $\forall x [X'(x) \rightarrow \sim Y'(x)]$ ", respectively.

For the purposes of illustration, it is instructive to consider in particular the reason why the second conjunct of the first postulate, i.e., " $\sim X'(x) \rightarrow Y'(x)$ ", does not hold for contraries. The reason for this logical property is precisely that the result of the application of the antonymy operator on a particular member, e.g., the sense corresponding to 'X', of an antonymous n-tuple containing the underlying senses corresponding to 'X', 'Y', 'Z', ..., returns a disjunction of the senses corresponding to 'Y' and, at least a third sense, corresponding to 'Z'. Thus, the implication ' $\forall x [\sim X'(x) \rightarrow Y'(x)]$ ' is not valid for instances of contrary antonymy. However, there is no need for this to be stipulated by a separate meaning postulate of the system; instead, it is a logical property that arises from the grouping of senses into antonymous n-tuples where $n > 2$.

The other logical properties of the two kinds of antonymy arise in an analogous manner. The basis of the logical properties represented by the incompatibility postulate, what Cann called the postulate for 'Opposites', i.e., " $\forall x [X'(x) \rightarrow \sim Y'(x)]$ ", has already been treated of earlier when we presented Katz' solution to the colour incompatibility problem. The distinct advantage of Katz' semantic theory in this regard is that, in Cann's system a separate meaning postulate must be stipulated for every predicate incompatible with 'X', i.e., 'Y', 'Z', etc., whereas Katz' semantic theory achieves this all at once by way of the inclusion of a superordinate sense in the selection restriction of a categorised variable that is a component of the reading for each member of an antonymous n-tuple. That is, because the senses corresponding to 'Y', 'Z', etc., all fall under the same superordinate

sense, their incompatibilities with the sense corresponding to 'X' can be dealt with altogether.

In order to complete our exposition of Katz' treatment of these kinds of antonymy, we should recall the problem that we noted in Chapter 4 regarding Cann's treatment of what he called 'Antonyms', in the narrow sense of "opposites restricted to a particular domain" (Cann, 1993, p. 221), that is, the domain specified by the property named by P in the meaning postulate. There I pointed out that this approach did not provide a way to determine what property P is and, apart from saying that it should be a property of the object referred to, we left the question unanswered.

Katz happens to deal with the very same instance of this problem during his discussion of *absolute* and *relative* adjectives. He notes that while the sentence "A small elephant is big." is not contradictory, a sentence such as "A carnivorous (sick, dead) elephant is herbivorous (healthy, alive)." is contradictory. The difference between these two sentences is that while the first contains relative antonymous adjectives, the second contains absolute antonymous adjectives (Katz, 1972, p. 255).⁹⁹ The reason that sentences such as the second sentence are marked as contradictory by the semantic theory has already been explained earlier in this chapter (essentially, that their readings contain semantic markers belonging to the same antonymous n-tuple). However, the reason that the first sentence is not marked as contradictory has not been explained.

The reason is that 'small' and 'big' in that sentence are relativized "to the appropriate feature of *things of that kind generally*" (Katz, 1972, p. 255). Katz suggests that, in this case, the sentence means that "an elephant which is small for an elephant is big for an animal" (p. 255). That is, when a relative adjective like 'small' modifies its nominal head, e.g., 'elephant', its sense is relativized straightforwardly to the sense of 'elephant' as a whole (Katz, 1972, p. 255; cf. Katz, 1967, p. 188). However, when the construction is not of this form, another mechanism is required to determine which sense the adjective is relativized to. That is, Katz' problem is that of how to show that 'big' in the above example relativizes to the sense of 'animal', which is contained in the sense of 'elephant', as opposed to some other sense that is contained in the sense of 'elephant', e.g., the sense of 'physical object'.

⁹⁹ Katz' treatment of this problem in *Semantic Theory* (1972), presented here, is a development of an earlier treatment presented in an article by Katz from 1967 entitled 'Recent Issues in Semantic Theory', pp. 184-9.

Katz provided only the general form of the semantic markers required, and he admitted that a full solution was not possible at the time given that the required theoretical apparatus had not yet been developed (Katz, 1972, p. 258). He provides the following example of the form of the semantic marker for the case of the relative adjective 'high':

$$\begin{array}{c} \text{[NP, S]} \\ \text{(((Size)({Vertical} spatial orientation) of X) >} \\ \text{< >} \\ \text{((Size)({Vertical} spatial orientation) of (Average \Sigma))}. \end{array} \text{ (Katz, 1972, p. 258).}^{100}$$

Katz says that the marker in the braces, '{Vertical}', distinguishes between the readings for adjectives like that for 'high' above and that for 'long', which would include the marker '(Horizontal)' instead (Katz, 1972, p. 258). However, it should also be noted that all of the markers occurring before each of the two occurrences of 'of' above could be changed to account for other differences in sense, that is, to account for senses that do not involve sizes of certain spatial orientations (cf. Katz, 1967, p. 186).

The problem at hand is how to define the dummy marker ' Σ ', which stands for a variable categorised by functions of the form '[NP, S] & K' (p. 260). The first conjunct is a syntactic function that specifies that the variable must be filled with a semantic marker occurring in the reading of the subject of the sentence (p. 258). The second conjunct 'K' is a function that picks out the appropriate semantic marker from the reading of the subject. Katz' solution is to define the K function so that it picks out the *lowest order category*, that is, he says:

[...] the appropriate semantic marker is the semantic marker in the reading of the subject which renders other semantic markers in the reading (if there are any) redundant but which is not itself rendered redundant by any semantic marker in the reading. (Katz, 1972, p. 259)

Katz gives the following examples of the application of this condition. When the K function takes as its argument the semantic marker for each of the following terms, 'Skyscraper', 'Texan', 'Flea', 'Ocean', 'Tarantula', 'Compact car', 'Chair', it returns the

¹⁰⁰ I have modified the expression given in the braces for ease of typography. The original is in the form of a vertically written list, {Vertical, Horizontal, ...}, which expresses alternatives.

semantic marker, '(Building)', '(Human)', '(Insect)', '(Body of water)', '(Spider)', '(Automobile)', and '(Furniture)', in each case, respectively (Katz, 1972, p. 259).

The reason that Katz' semantic theory does not mark the sentence "The small elephant is big." as being contradictory is that, contradiction arises only in cases where the reading for a sentence contains two semantic markers that belong to the same antonymous n-tuple, that is, where the readings of 'small' and 'big' are relativized to the same Σ . Katz puts this succinctly during his earlier treatment, thus:

For the semantic markers (Greater in size than (an average Σ)) and (Less in size than (an average Σ)) are antonymous, i.e. belong to the same antonymous n-tuple of semantic markers, only if each Σ is replaced by the same semantic marker(s). (Katz, 1967, p. 189)

Katz points out that his treatment of relative adjectives also provides a way of explaining inferences such as that from "This man is tall and that man is short" to "This man is taller than that man". The reason for this is that 'tall' and 'short' are relativized to the sense represented by the semantic marker '(Average Σ)', where Σ is the categorised variable that is replaced by the semantic marker '(Man)' by way of the K function described above. As such, this semantic marker effectively provides a middle term by means of which the sense of the inferred sentence follows "based on the transitivity of the relations" (Katz, 1972, p. 260).

The K function above is not the only kind of function that may be used to determine the value of Σ . There are others, such as, the example provided above for the nominal head + modifier kind of composition, and cases where the relative adjectives are relativized in an absolute manner, e.g., in the case of "The elephant is littler than the dog.", where '(Average Σ)' is replaced simply by the reading for 'the dog' (Katz, 1967, pp. 185, 188).¹⁰¹ Since I have already explicated what we set out to explicate, i.e., why the semantic theory does not mark "The small elephant is big." as contradictory, and how Katz' theory succeeds in providing a function that determines the value of the comparison class (where Cann's theory does not) and, furthermore, that there is much more that remains to be said in this chapter regarding the other kinds of antonymy, I will not consider these matters further at the present time.

¹⁰¹ Katz does not go into much detail in *Semantic Theory* (1972), about these other functions and their employment. He does refer to them briefly in his 1967 article, but considers them to be merely "matters of detail" (1967, p. 188).

§4.2 Non-binary antonymy revisited

In the previous chapter we considered what appeared to be an outlier to the main kinds of antonymy, that of non-binary antonymy. However, in the context of Katz' semantic theory, it turns out that the difference between binary and non-binary examples is not to be explained semantically. That is, at the level of the semantic component of a grammar, which deals only in the representation of sense structures by way of semantic markers, such a distinction cannot be drawn. This is because the distinction, as it was presented in the last chapter, which was derived from the views of certain linguists, is grounded in how antonymous senses are expressed morphologically. That is, we can only make the distinction in terms of the surface forms of these expressions.

The claim that I wish to make here is that in Katz' semantic theory the distinction between binary and non-binary antonymy collapses. Indeed, Katz himself states this explicitly when he says that "The general case of antonymy relations is not pairs, but *n*-tuples" (Katz, 1972, p. 51). He is also careful to explain that the semantic conception of antonymy is to be "understood in the broad sense which goes beyond the lexicographer's usage where "antonymy" is usually applied only to the relation when it holds of words" (Katz, 1972, p. 51). The other side of this issue is that antonyms, in Katz' system, may also be expressed by a number of words, a phrase that does not form a complete sentence. In contrast to the lexicographical conception, the semantic conception of antonymy is based on an account of underlying sense structure, and this in turn is involved in the explanation of other sense properties and relations, as we have seen earlier in this chapter. I take this to mean that Katz, for the purposes of constructing a semantic theory, is not interested in the psycholinguistic appeals to the binarity of canonical oppositions, for these (performative) intuitions add little that is universal to an understanding of deductive relationships between senses, and expressions of language.

Indeed, the views of some of the linguists whose work we discussed in the last chapter tend in this direction also. We should recall here Jones' comment, regarding Lyons' *scale/rank* distinction between kinds of *serially* ordered sets of antonyms, that "Lyons' notion of 'scale' is too closely related to gradable antonymy to warrant differentiation" (Jones, 2002, p. 19). When we have a set of terms whose senses are related through being incompatible determinations in relation to a scale with two

poles, there is no difference between the sense structure underlying these terms and that underlying a set of terms with two members, where that opposition is a gradable one. That is, the lexicalisation of the terms of a particular language in this case does not indicate any semantic difference regarding the underlying sense structure; some languages may lexicalise points on an underlying scale that others do not, but this does not mean that the relations between these points (senses) are to be characterised in terms of a different kind of antonymy. This can be seen from the fact that the very same semantic properties and relations arise in these cases. That is, they will have the very same kinds of properties that arise from ('binary') contrary antonymy (that is, where they are also relative adjectives).

What I have said above should not be taken to mean that Lyons' *rank* sub-kind of *serially* ordered NBA should be equated with complementary antonymy. In this case, there are still sets of antonymous n -tuples where $n > 2$ involved; therefore, on the basis of the treatment given above these must also be instances of contrary antonymy. The only difference is that there is no gradation possible between these senses; that is, even if they form part of a dimension of sense between one pole and another, this dimension will nonetheless be divided into discontinuous senses, which are expressed by absolute adjectives.

Turning from Lyons' *serially* ordered kind of NBA to his *cyclical* kind of NBA, we must note that nothing that has been said by Katz about the possible structure of antonymous n -tuples obviously relates to such cases. For example, for an ordered n -tuple containing the senses of the days of the week, represented by the n -tuple of semantic markers, (Monday), (Tuesday), ... , (Sunday), although it might be predicted that 'Monday is before Tuesday' is analytic on a sense, 'Monday is after Sunday' and 'Sunday is before Monday' could not be predicated to be analytic on any sense. In order to account for these kinds of predictions, we must introduce a new kind of antonymous n -tuple. We may introduce a definition of the underlying sense structure of such a kind of antonymy generally as follows:

Any ordered antonymous n -tuple of semantic markers written $(M^{(\alpha_1)}), \dots, (M^{(\alpha_{n-1})}), (M^{(\alpha_n)})$, where $n \geq 3$, is a *cyclical* antonymous n -tuple if and only if, it may also be written $(M^{(\alpha_n)}), (M^{(\alpha_{n+1})}), \dots, (M^{(\alpha_{n-1})})$, where $(M^{(\alpha_1)}) = (M^{(\alpha_{n+1})})$, without a change in any of its semantic properties, but may not be written in any other permutation (apart from further applications of this

condition), and, where $n = 2$, any ordered antonymous n -tuple of semantic markers $(M^{(\alpha_1)}, M^{(\alpha_2)})$ is a *cyclical* antonymous n -tuple if and only if it may also be written $(M^{(\alpha_2)}, M^{(\alpha_1)})$, without a change in any of its semantic properties.

This definition effectively collapses all of the possible permutations of a cyclical antonymous n -tuple into the one entity, and thereby provides a means of marking the above problematic sentences as being analytic on a sense. It is examples such as this that really show the flexibility of Katz' system, and its ability to provide the basis for newly characterised semantic properties and relations.

§4.3 Converse antonymy

The third kind of antonymy that Katz explicitly recognised is that of 'Converses'. It will not be possible to go into all of the details of his treatment of converses here due to its density and complexity, and that the attendant exposition of the formal devices that he employs occupies an entire chapter of his book, *Semantic Theory*, which is a further development of suggestions that were made in earlier work.¹⁰² As such, in what follows I will instead explicate his view particularly in contrast to the meaning postulate approach, as I have done for the other kinds of antonymy before giving a short exposition of Katz' treatment of converses.

Despite listing converses as a kind of antonymy earlier in his book (Katz, 1972, p. 159), when Katz comes to his extended treatment of this relation later his method involves attending to the synonymy of the expressions that they are involved in, thereby treating the converse relation as "a special case of the synonymy relation" (Katz, 1972, p. 293). He explicitly contrasts his treatment of the synonymy of expressions containing converses with the manner in which converses are treated of in predicate logic as being logically equivalent. He states the form of such a logical

¹⁰² Cf. *Semantic Theory*, Chapter 7. This chapter is a development of the treatment of converses presented in an article by Katz from 1967 entitled 'Recent Issues in Semantic Theory', pp. 171–3. The chapter also discusses issues that were treated of in another article from 1967, specifically on the treatment of the synonymy of active-passive sentences, by Katz and Martin entitled 'The Synonymy of Actives and Passives', which was a reply to the 1966 article by Paul Ziff entitled 'The Nonsynonymy of Active and Passive Sentences', in which Ziff objected to the treatment given in Katz and Postal's 1964 work, *An Integrated Theory of Linguistic Descriptions*. This debate is largely tangential to our concerns so I will not consider it here.

equivalence for the dyadic converses 'H₁' and 'H₂' as: " $(x)(y)[H_1 x,y \equiv H_2 y,x]$ " (Katz, 1972, p. 294).¹⁰³ It is important to notice that this formula is quite similar to what would be a specific case of Cann's meaning postulate schema for converses, i.e., " $\forall x \dots \forall y [X'(y) \dots (x) \rightarrow Y'(x) \dots (y)]$ " (Cann, 1993, p. 221); the formula stated by Katz is logically equivalent to the following conjunction of two instances of Cann's schema corresponding to the meaning postulates for the converse relations 'H₁' and 'H₂': ' $\forall x \forall y [(H_2(y)(x) \rightarrow H_1(x)(y)) \& (H_1(x)(y) \rightarrow H_2(y)(x))]$ '.

Although Katz does not explicitly provide a contrast with, and argument against, a meaning postulate approach to converses, such a contrast is implicit in his statement that:

Reference to the definition of the converse relation in logic is only a way of saying that converses have the same truth conditions. It does *not* say which cases in language are equivalent because they are converses or why they are synonymous; it does not say why they have the same truth conditions but merely that they do. (Katz, 1972, p. 294)

Although what Katz says here regarding the definition of the converse relation in logic not providing a list of cases is correct, a meaning postulate approach to converses based on this definition, or one that is similar in the relevant ways (e.g., Cann's), would indeed say which expressions in a particular language are converses. However, this approach would succumb, as did the examples we looked at earlier in this chapter, to Quine's generality criticism. That is, such meaning postulates would be specific to a particular language and could not be generalised to cover all languages. The second part of Katz' statement should be more familiar from our discussion earlier in this chapter of Quine's explanation criticism and Katz' arguments against meaning postulates. That is, we should notice here that, just as Katz says is the case for the definition of the converse relation in logic, the meaning postulate approach to converses also does not provide the reasons *why* they are synonymous and, following from this, does not say *why* they have the same truth conditions.

Katz distinguishes between the kind of converses involved in pairs of synonymous active-passive sentences and those that are pairs of converse antonyms involved in corresponding pairs of synonymous sentences. He does this on the basis

¹⁰³ Square brackets in original.

that “In the active-passive cases the *same* verb or converse constituent occurs in both sentences, whereas in the other types a *different* verb or converse constituent occurs in each sentence” (Katz, 1972, p. 295). He explains that, in the case of the active-passive sentences, their synonymy can be explained on the grounds of syntactic theory, given that the difference between the verb or converse constituents of these sentences is stated in the form of grammatical markers such as ‘Passive’ and ‘Active’, which are contained in the underlying phrase markers of these sentences. These markers contain no semantic content, and have no entry in the semantic lexicon of the theory. As such, the semantic component of the grammar straightforwardly assigns to active-passive pairs of sentences the same set of semantic readings and, consequently, it also marks them as being synonymous.¹⁰⁴ Katz argues that the synonymy of the latter kind of sentences, those involving pairs of converse antonyms, cannot be explained in the same manner as the active-passive pairs given that the converse constituents in these cases differ in their semantic content (Katz, 1972, pp. 295–6).

He then proceeds to show, through a series of what I take to be decisive arguments, that the other available possibilities for a syntactic explanation of the synonymy of these sentences also do not work (Katz, 1972, pp. 296–302). I will forgo an exposition of these arguments here, because such an exposition would lead us too far afield and would not add anything of relevance to our consideration of Katz’ eventual semantic solution to the problem. As such, we will now proceed to our

¹⁰⁴ Another (extensional) approach to the problem of the representation of the synonymy (truth conditional equivalence) of active-passive pairs is presented by Cann, Kempson, and Gregoromichelaki (2009, pp. 87–91) who employ a typed lambda calculus in order to represent the difference between the active and the passive sentences in a pair. They give the following lambda expressions for the active “*John loved Mary*” (p. 87) and the passive “*Mary was loved by John*” (p. 90), ignoring tense: “ $(\lambda y \lambda x [Love'(x,y)](m))(j)$ ” (p. 89) and “ $(\lambda x [\lambda y [Love'(x,y)](j)])(m)$ ” (p. 90) respectively. Each of these expressions is truth functionally equivalent to the predicate logic expression “*Love'(j,m)*” (p. 90). A similar approach is also presented in earlier work by Cann (1993, pp. 112–126). While the lambda calculus approach is all well and good as far as it goes, it cannot assist us with the further problem regarding the semantic representation of converse antonymy. This comes down to the fact that whereas in the above active-passive example only one polyadic predicate is involved, in the case of a converse antonymy, for example, between ‘Buy’ and ‘Sell’, there are two. Further applicable reasons against such an approach to converse antonymy are presented during Katz’ series of arguments against syntactic solutions to the problem (Katz, 1972, pp. 296–302); for example, in disanalogy with the case of the relation *Love'* in the above active-passive example, in the case of converse antonymy we should not introduce an abstract predicate *X'* that is equivalent to each of the two polyadic predicates e.g., *Buy'* and *Sell'*, given that this would lower the evaluation of the grammar due to the introduction of a language specific abstract predicate (Katz, 1972, p. 298). Instead, the solution must be found by way of a decomposition of the senses of these predicates in semantic theory.

consideration of this solution. However, it will not be possible to go into the depth of detail that Katz does in his exposition of the formal devices employed.

Unfortunately, without a complete exposition of all the formal devices employed, it will be pointless even to reproduce Katz' precise notation for the semantic markers of the converse expressions 'sell' and 'buy', which are the longest semantic markers contained in his book, each of them written in bracketed notation and occupying a full, landscape-orientated page (cf. Katz, 1972, pp. 342–3). Fortunately, Katz, perhaps realising the daunting complexity of what is presented on these pages, also provides a significantly less dense simplification for each of these two process semantic markers,¹⁰⁵ thus:

sell; (((Condition) (Possesses Y) of X at T_i), ... ,
 ((Condition) (Possesses Y) of Z at T_j) &
 (((Condition) (Possesses W) of Z at T_i), ... ,
 ((Condition) (Possesses W) of X at T_j)))

buy; (((Condition) (Possesses Y) of Z at T_i), ... ,
 ((Condition) (Possesses Y) of X at T_j) &
 (((Condition) (Possesses W) of X at T_i), ... ,
 ((Condition) (Possesses W) of Z at T_j))). (Katz, 1972, p. 344)

Each of the bracketed expressions dominated by '(Condition)' in the above schemata is a *state semantic marker*, which expresses a state of something at some time or over some interval. Each of the two groups of state semantic markers with at least an initial and a terminal state semantic marker is a *process semantic marker*. These *singular* process semantic markers are conjuncts of *n-ary process semantic markers*; in this example, 'sell' and 'buy' are each represented as n-ary process semantic markers where n = 2 (Katz, 1972, pp. 302–6, 339). The uppercase single letters in the above schemata stand for categorized variables: 'X' stands for the variable categorized for the 'subject-of' relation, 'Y' categorized for the 'object-of' relation, 'Z' categorized for the 'indirect-object-of' relation, 'W' categorized for the 'secondary-indirect-object-of' relation, and 'T' categorized for the 'inflexional' relation. What is evident from the schemata for the process semantic markers quoted above is that the readings for 'sell' and 'buy' are the same except for a permutation of the variables

¹⁰⁵ This simplification is based on Katz' earlier treatment of converses (cf. Katz, 1967, p. 172).

categorized for the ‘subject-of’ (‘X’) and ‘indirect-object-of’ (‘Z’) relations (Katz, 1972, p. 344).

Katz views the processes of buying and selling as each being double processes of exchange, that is, when someone sells something they transfer possession of it to a buyer, and in return the buyer transfers possession of some money to the seller. This second process is what distinguishes selling from, e.g., bartering, giving, etc. (Katz 1972, pp. 306, 348). These processes are all spelt out in terms of semantic markers that represent the condition of possession by the seller and buyer of these items at a certain time.

The reason that the definitions of ‘sell’ and ‘buy’ presented above, lead to the synonymy of certain sentences containing them as constituents is that when the readings for the categorised variables are chosen in relation to these sentences, by the projection rule, the derived readings for these sentences will be identical. Katz’ explanation of this synonymy is quite lengthy and describes in careful detail how the synonymy of each of the components arises (cf. Katz, 1972, pp. 344–6). However, this can be illustrated in a more straightforward way by presenting Katz’ two example sentences, “John sold the book to Mary” and “Mary bought the book from John” (Katz, 1972, p. 296), together with the symbols representing the categorised variables of the converse constituents. In the following table, these symbols are placed directly above the other constituents of each of the sentences; the readings for each of these constituents will fill those variable places that are mentioned directly above them, i.e., as the variables appear in each of the lexical readings for ‘buy’ and ‘sell’ quoted above:¹⁰⁶

X	T	Y		Z
John	sold	the book	to	Mary
Mary	bought	the book	from	John

On this basis, the derived readings for the two sentences, which are built upon the definitions of the converse constituents ‘sell’ and ‘buy’ quoted earlier, will come out as being identical despite the fact that *in isolation* ‘sell’ and ‘buy’ have different

¹⁰⁶ The variable W is not included here because there is no constituent corresponding to it, i.e., it is hidden; however, it still receives the reading ‘(Sum of money)’ given that this is its selection restriction (Katz, 1972, pp. 342–3; Katz, 1967, p. 172); that is, buying and selling always involve a sum of money, even if this is not stated explicitly in the surface form of a sentence.

readings due to the differences in the categorisation of the variables internal to their semantic markers. Thus, the case of converse antonymy is another example of how the use of categorised variables allows for the distinction between the meaning of a word *in a sentence* and *in isolation*. This is in contrast to the synonymy of the active-passive pairs of sentences that obtains in virtue of their syntax, which are sentences that have no *semantic* difference to each other at any level.

Following from his consideration of the case of ‘buy’ and ‘sell’, Katz provides a definition of converse constituents. He says that:

This suggests the definition of the ‘converse relation’ given [below], where x is the image of y if and only if $x \in \{v_1, v_2, \dots, v_n\}$ & $y \in \{v'_1, v'_2, \dots, v'_n\}$ and, for $1 \leq i \leq n$, $x = v_i$ & $y = v'_i$:

A constituent C is a converse of a constituent C' (and vice versa) if and only if their readings are the same except for the categorized variables v_1, v_2, \dots, v_n occurring in the reading of C and the categorized variables v'_1, v'_2, \dots, v'_n occurring in corresponding positions in the reading of C' (i.e., $v_1 \neq v'_1, v_2 \neq v'_2, \dots, v_n \neq v'_n$ where $n \geq 1$), and if $v_i = v_j$, then $v'_i = v'_j$, and if $v'_i = v'_j$, then $v_i = v_j$, and, finally, for each v_i and v_j , if $v_j =$ the image of v_i , then the image of $v_j = v_i$, and for each v'_i and v'_j , if $v'_j =$ the image of v'_i , then the image of $v'_j = v'_i$. (Katz, 1972, p. 344)

Unfortunately, and quite uncharacteristically for Katz, he gives no exact exposition of the intended use of the figurative expression “the image of ...”, and the expression is used nowhere else in the book.¹⁰⁷ The above specification of “ x is the image of y ” prior to the definition, could be read as saying that one categorized variable is the image of the other if and only if they are both placed at the same point i in the two lists of categorized variables. That is, they must have the same subscript but different superscripts. As such, we might be tempted to reinterpret the final clause of the definition, that which follows “finally”, as saying that, ‘for each v_i and v_j , if $v_j = v'_i$, then $v'_j = v_i$, and for each v'_i and v'_j , if $v'_j = v_i$, then $v_j = v'_i$.’ However, combined with the previous two clauses, i.e., $v_n \neq v'_n$ for any $n \geq 1$, and $v_i = v_j$ if and only if $v'_i = v'_j$, this interpretation would lead to a contradiction as follows: if $v_j = v'_i$ and $v_i = v_j$, then $v_j = v'_j$, but $v_n \neq v'_n$ for any $n \geq 1$ is assumed. As such, we should conclude that “ x is the image of y ” is underspecified, at least in terms of this interpretation of the definition.

¹⁰⁷ Also, to the best of my knowledge, this is also the only work in which Katz states the general definition for converses. The expression “the image of” is also used once in an earlier article (cf. Katz & Fodor, 1963, p. 178: n. 9). However, this usage seems somewhat unconnected with the usage in the definition of converses.

However, by way of tracing how the general definition applies to the specific case of 'buy' and 'sell' already outlined we can arrive at the correct interpretation of the formalism. Consider the following table that is laid-out according to the definition of converses above:

i_1	i_2	j_2	j_1
X	Z	Z	X
Z'	X'	X'	Z'

As per the first clause of the definition, the second and third rows contain the symbols for the categorized variables that are distinct from each other in the two lexical definitions of 'buy' and 'sell' given above, i.e., $Z \neq X$. The two rows are also distinguished by superscript prime marks in order to correspond to the layout in the general definition of converses. The first row provides two subscripted examples of i and j values for the variables below. It can be seen from this that the table also accords with the second clause of the general definition, $v_i = v_j$ if and only if $v'_i = v'_j$, for example, $X_i = X_j$ and $Z'_i = Z'_j$ (as, indeed, is already shown by the use of each of the uppercase symbols). Now, in order properly to understand the third and final clause of the definition we must understand at what stage and in what respect, for example, " $v_j =$ the image of v_i " is the case; that is, at what stage and in what respect $X_j = Z'_i$, which follows from the specification of " x is the image of y " that says that the two variables involved must have different superscripts. The answer, of course, is that this is only the case subsequent to the projection rule's production of the derived readings for the two sentences; that is, only when both variables are given the reading for the constituent 'John', because, as was explained above, in accordance with the first two clauses of the general definition (and as shown by the symbolism used here), $X_j \neq Z'_i$ *qua variables* and prior to the operation of the projection rule. The other equivalences stated in the third clause can be seen to work in an analogous manner. As such, I surmise that " x is the image of y " means that the reading given in place of x as the result of the operation of a projection rule upon this variable, is the same as the reading given in place of y as the result of the operation of a projection rule upon this variable.

One further question that we should consider here is that of how this approach can deal with the oppositeness of converse antonymy, for example, how it

can show that certain pairs of sentences involving converses are contradictions. Let us recall here my criticism, in Chapter 4, of Cann's objection to the relationship between 'buy' and 'sell' necessarily involving opposition. Cann's claim was that "*Bertie bought some gin from Ethel* does not imply that *Bertie didn't sell some gin to Ethel*" (Cann, 1993, p. 217). There I argued, contra Cann, that 'Bertie bought some gin from Ethel' must entail that Bertie did not both buy the same gin from, and sell the same gin to, Ethel at the same time, for this is would be a contradiction in virtue of the converse antonymy. So, to illustrate how Katz' semantic theory can help us with this problem we should attend to an explanation of how (i) 'Bertie bought some gin from Ethel' entails (ii) 'Bertie did not sell some gin to Ethel'. First of all, it is clear that the satisfaction of the first sentence on a particular sense, rules out the satisfaction of the sentence (iii) 'Bertie sold some gin to Ethel' on a particular sense. That is, where each sentence is about the same process, same interval of time, same item being bought and sold, and for the same money. This can be illustrated in a similar manner to how the synonymy of converse sentences was illustrated above with a table of the categorised variables aligned with the sentence constituents whose readings they take:

X	T	Y		Z
Bertie	sold	some gin	to	Ethel
Bertie	bought	some gin	from	Ethel

Let us now attend to only the first conjunct of each of the schemata for the readings of 'sell' and 'buy' above, i.e., the conjuncts representing the process of the exchange of possession of the gin:

Sell (1st process): (((Condition) (Possesses Y) of X at T_i), ... ,
 ((Condition) (Possesses Y) of Z at T_j))

Buy (1st process): (((Condition) (Possesses Y) of Z at T_i), ... ,
 ((Condition) (Possesses Y) of X at T_j))

It is clear from this that the readings derived from these schemata are contradictory for the readings of the sentences where the same gin is involved at the same times. That is, the initial state semantic marker of the first process semantic marker for 'sell'

above would take the reading of 'Bertie' for X, and that for 'buy' would take the reading of 'Ethel' for Z; the situation is reversed for the terminal state semantic markers. As such, the derived readings for the processes above represent contradictory states of possession of the gin by both 'Bertie' and 'Ethel' at the same times, i.e., at both the times specified in the readings of 'T_i' and 'T_j'; also, the readings for these processes each represent the relinquishing of possession of the gin over time, but in contradictory directions, i.e., from Bertie to Ethel and from Ethel to Bertie at the same time. Thus, a sentence such as 'Bertie bought some gin from Ethel, and Bertie sold the gin to Ethel' would be marked as being contradictory on a sense (i.e., where the same gin and times are involved). It follows from this that if the conditions of 'Bertie bought some gin from Ethel' are satisfied that the conditions of 'It is not the case that Bertie sold the gin to Ethel' are also satisfied, on a sense. That is, the first sentence entails the second on a sense. The second sentence is equivalent to 'Bertie did not sell the gin to Ethel' given that it is the main predicate phrase of the sentence that is negated. Thus, we have succeeded in showing that Katz' semantic theory predicts the entailment that Cann denied.

Furthermore, we have also shown that the contradictions that arise from converse antonymy arise on the basis of the very same sense structure as that which is predicted by the theory to be the basis of the synonymy of certain pairs of sentences involving converse antonymy. In comparison to the meaning postulate approach, which must stipulate at least two logically separate postulates in order to account for the logical properties of converse antonyms, Katz' semantic theory is superior in that it accounts for all of the logical properties of converse antonyms on the basis of a representation of the same sense structures. Another interesting property of Katz' definition of the converse relation, given that it is what accounts for the synonymy of certain sentences, is that if there is a situation similar to the contradictory one just outlined above, then the relation actually ceases to accord with the definition. This is because the categorized variable places will not be filled in such a way that will accord with the third clause of the definition. That is, after the operation of the projection rule 'X ≠ Z' holds and, therefore, e.g., " $v_j = \text{the image of } v_i$ " does not.

§4.4 Reversive antonymy

Another of the main kinds of antonymy, which features during Katz' discussion of the formal devices that he eventually uses to define converses, is that of *Reversives*. However, Katz himself does not seem to recognise this, perhaps because very little attention had been paid to this kind of antonymy at the time.¹⁰⁸ Following Katz' introduction of the formal devices that he called *State* and *Process* semantic markers, as part of his attempt to give semantic representations of converses, he briefly notes that because of this it is possible to define some new semantic relations. He provides, as an example of one of these relations, one that he calls a *conversion triple* (Katz, 1972, p. 361).¹⁰⁹ Katz provides the following examples of this relation:

- [1] (a) sick, well, recovers
(b) knows, doesn't know, forgets
(c) asleep, not asleep (awake), awakens
(d) alive, dead, dies

- [2] (a) well, sick, becomes ill
(b) doesn't know, knows, learns (comes to know)
(c) not asleep (awake), asleep, falls asleep
(d) dead, alive, is resurrected
(Katz, 1972, p. 361)

Each one of these eight examples is intended as an example of a conversion triple. Katz then provides a definition of the conversion triple relation as follows:

Three words or expressions form a conversion triple just in case two of them have readings that are state semantic markers belonging to the same antonymous n-tuple and the third has a reading that is a process semantic marker whose initial state semantic marker is one of the aforementioned state semantic markers and whose terminal state semantic marker is the other. (Katz, 1972, p. 361)

Katz' treatment of this relation ends here and no more is ever said about it than what I have reproduced above. However, what we should find oddly lacking here is that

¹⁰⁸ Cruse remarked even later, in 1979, that the class of reversives "seems to have suffered (perhaps unjustly) relative neglect" (Cruse, 1979, p. 958).

¹⁰⁹ To my knowledge, this relation is not treated of again in any of Katz' later work.

although Katz introduces this relation by way of two numbered groups of examples, which are, in an obvious way, related to each other, he said nothing about *that* very relation. That is, in particular, the relation between the third term of each example and the third term of its corresponding example in the other numbered group, (but, also the relationship between the ordering of the first and second terms of each example and the opposite ordering of the first and second terms of the corresponding example in the other numbered group). This, I claim, should properly be identified as being the relation of *reversive antonymy*.

If this claim is accepted, then it is manifest that Katz' semantic theory provides us with a way to define this kind of antonymy. That is, two words or expressions are *reversives* just in case they each belong to a conversion triple as its third member, and that the first and second members of both conversion triples are the very same, except that they each occupy the other's position in the opposite triple, i.e., that they are ordered in the opposite way. We should, however, spell out this definition a little more, given that only indirect reference is made to the semantic marker formalism by way of the previously defined notion of a conversion triple, which might make it seem as if *reversive antonymy* is merely an expressional semantic relation. However, *reversive antonymy*, like other kinds of antonymy, is a kind of relation that holds primarily between senses, i.e., it is a nonexpressional semantic relation. This can be seen from the fact that an analogous relationship holds between the underlying sense structure of these expressions, which is represented in the semantic marker formalism of the theory. That is, each member of a pair of *reversive antonyms* has a reading that is a process semantic marker whose initial state semantic marker is the same as the marker that is the terminal state semantic marker of the other in the pair and, *reversely*, that for each of these process semantic markers, the terminal state semantic marker is the same as the marker that is the initial state semantic marker of the other in the pair.¹¹⁰ Additionally, we should also repeat Katz' important condition that these state semantic markers must belong to the same antonymous n-tuple.

We should recall here the distinction that Cruse makes between the sub-categories of *determinate* and *relative reversives*, which I briefly outlined in Chapter 4. There I claimed that this distinction is grounded in the distinction between complementary and contrary antonyms. Given that the definition that I have

¹¹⁰ This treatment is similar, in a certain manner, to that which was suggested by Cruse (cf. 1979, p. 959).

provided above for reversive antonymy, using the resources of Katz' semantic theory, involves an essential reference to antonymous n-tuples, the relationship between these two distinctions becomes quite apparent. As such, Katz' semantic theory allows us to provide further definitions for these sub-categories of reversive antonymy. That is, a determinate reversive antonymy holds between senses that are both, related by reversive antonymy, and whose relevant state semantic markers belong to an antonymous n-tuple that underlies a complementary antonymy, i.e., that the n-tuple contains only two senses. In contrast, a relative reversive antonymy holds between senses that are both, related by reversive antonymy, and whose relevant state semantic markers belong to an antonymous n-tuple that underlies a contrary antonymy, i.e., that the n-tuple contains more than two senses. Additionally, the distinction between those kinds of 'relative' reversive antonyms that are represented by relative adjectives and those that are not, can be drawn by way of the presence or absence of a relative semantic marker, which we have described earlier in this chapter in §4.1.

Thus, we should also notice here that the *unity*, which corresponds to the particular kind of *opposition* that is involved in the two kinds of reversive antonymy, is derived from the same place that the unity of the other kinds of antonymy is derived from. That is, it is derived from the containment of the superordinate sense of the members of an antonymous n-tuple within each member of that n-tuple. This containment is what is responsible for the grouping of antonymous n-tuples that have the same superordinate sense components. Similarly, the *opposition* of reversives does not just arise from the reversal of the ordering of the relevant component senses, which are represented as state semantic markers, it also comes from the fact that these very senses are themselves antonymous and, as such, can be contained as initial and terminal markers of process semantic markers of the requisite form.

§5 The parallel with Heraclitus' rejection of the naïve view of opposition

During the preceding discussion in this chapter and the previous one, we have seen how in modern philosophy of language there have been two main methods employed for defining antonymy, on the one hand through extensionally based means, by those

who follow in the tradition of Carnap's 'conservative' intensionalism and his use of meaning postulates, and on the other through intensionally based means, for example, by Katz, who employs a decompositional semantics. Katz' arguments, following those of Quine, reveal the meaning postulate approach to be *ad hoc*, not capable of being generalised to all cases and languages, and, thereby, to be non-explanatory. Further, Katz' own semantic theory provides us with the tools to define a broader range of the antonymous sense relations that have been recognised by linguists than the meaning postulate approach considered, for example, the extensions to Katz' theory that I provided to account for *cyclical non-binary antonymy* and *reversive antonymy*. The theory also provides semantic representations in a more simple and unified way than that in which meaning postulate approaches do. Take, for example, the manner in which the theory distinguishes between contrary and complementary antonymy primarily through a numerical count of the senses in an antonymous n-tuple, or the manner in which it apprehends the sense structure of converse antonymy, such that separate representations are not required to handle certain non-equivalent arising entailments, for example, in the case of the marking of synonymous converse propositions and of contradictory propositions; this is not the case for the meaning postulate approach, given that it requires a separate postulate in order to account for each strictly non-logical entailment and some of the entailments involving further extralogical expressions of the language.

I wish to draw a parallel between this modern debate and the one that Heraclitus was involved in against the characterisation of opposition in terms of external relations between character-powers, and the attendant semantic-epistemological corollary that saw the place of language as being primarily referential and largely dispensable for investigations of the world. The most immediately recognisable comparison that can be made here is by way of the fact that in both the modern extensional context and the ancient naïve context, the relation of opposition is seen as being between things or sets of things in the world and is approached in these terms. The modern extensionally based method attempts to define opposition by way of logical calculi, i.e., using meaning postulates, in virtue of reference to sets of things that, for example, exclude each other in the world. The ancient naïve metaphysics sees the relation of opposition as being due to a mere tendency for the relevant things to be apart, to exclude each other. Here too the paradigm is one merely of reference to, or direct acquaintance with, these things.

Thus, another element of the parallel that I am drawing here, is that of the similarity in a certain sense between what Mourelatos has explained as being the naïvely realistic semantic-epistemological corollary to mere thinghood in the NMT, that is, the paradigm of direct acquaintance or reference, and the view, according to some modern philosophers, that meaning can be accounted for purely in terms of reference or extension.

In both of these theories of opposition in particular, there is nothing that captures the intuitive necessity of the relation; that is, both theories leave open the possibility that, for whatever reason, the specified things could at some point in the future cease to exclude each other. In other words, these theories take pairs of entities to be opposites, or to be opposed, because they exclude each other, rather than to exclude each other because they are opposites, or are opposed. This would leave such possibilities open as it being night and day at the same time and in the same respect, or something being red and blue all over at the same time, etc. This is a notion of opposition that would be quite alien to most ordinary uses of deductive reasoning and would obviously entail a number of unpalatable consequences for rational thought.

As I pointed out at the beginning of Part 2 of this thesis, both Heraclitus' and Katz' reaction to these views of opposition involve approaches that seek to carry out explanation in terms of what could broadly be called intensional structure. Further, both Heraclitus' hypotactic metaphysics and Katz' decompositional semantics employ hierarchial structure as a basis from which to explain the necessary relations between opposites.

In the case of Heraclitus' hypotactic metaphysics, the recognition that opposites are internally or conceptually related to each other, and not externally and contingently so, is explained in terms of a hierarchical relationship between pairs of opposites and a superordinate entity that unites them. This, I argued, is expressed through Heraclitus' use of the linguistic phenomenon of *markedness*. Heraclitus also recognised that language or, rather, the fundament of the linguistic and rational capacity, *logos*, reveals a world that is *logos-textured* and that is conceptually articulated and structured, and that phenomena such as opposition can only be properly explained through the use of this capacity. That is, as opposed to the naïve view that language was ultimately dispensable for investigations of the world, given that it had the redundant role of being a convenience used to refer merely to things in

the world. As such, Heraclitus did not recognise such distinctions as those between what we would call philosophy of language, logic, and metaphysics.

In the case of Katz' decompositional semantics, hierarchical structure is employed in the form of the representations that he uses to describe the hierarchical structure of concept containment. In the case of antonymy in particular, this hierarchical structure is essential to the definition of these relations. For example, in the case of complementaries and contraries, the semantic readings for any pair of antonyms of a language must contain a marker representing a superordinate sense, which dominates each of the antonym specific senses of its antonymous n-tuple. Specific examples of this kind of structure have been explained earlier in this chapter, so I will not repeat them here. It is also notable, especially in the context of the parallel that I am drawing, that Katz takes his semantic theory to be useful for solving various philosophical problems, such as the colour incompatibility problem, the question of the status of the analytic/synthetic distinction, and others that have not been discussed in this thesis, for example, *the paradox of the ravens* (Katz, 1977b, pp. 90-1). Thus, Katz does not treat language or linguistic theory as being dispensable for philosophical investigation, in fact, he considers it capable of solving various philosophical problems when applied correctly.

What, I think, should be taken away as the salient lesson from the above parallel with Heraclitus' reaction to naïve metaphysics, is that it is a mistake to attempt to explain opposites and opposition merely on the basis of reference to sets of things in the world, without any account of hierarchical intensional structure and, thereby, the unity involved in opposition. Further, we should realise that it is a mistake to think that language or linguistic competence is dispensable for philosophical investigations.

It is not my purpose to suggest that Heraclitus was directly concerned with the issues that we are concerned with in modern philosophy, or indeed to understate the differences between the prevailing frameworks of these two epochs. Rather, it is to show that the insights that Heraclitus arrived at are still relevant for philosophy today, especially in the study of opposition in its various forms. One important fact to bear in mind in this regard is that we are already operating within a long tradition of developments in philosophy, which stem from the genesis of the discipline in ancient Greece, beginning in particular with the work of Heraclitus, Parmenides, Socrates, Plato, Aristotle, et al. What I mean by this is that the parallel that is to be drawn,

between modern philosophy of language and these ancient revolutions in philosophy, must be drawn in such a way that it takes account of the fact that the time of naïve metaphysics has past and that the developments of the last two thousand five hundred years of subsequent thought already inform the basic notions that we hold today.

While it can be seen that the ancient naïve metaphysics nonetheless operated within a subject-predicate structure, and this is not too surprising, it lacked certain distinctions, such as that between substance and attribute, which are often taken for granted in later times. Another important difference is that between the conceptions of what it is to be a thing, broadly speaking, in each of these systems. The *mere things* of the ancient naïve metaphysics, also called *character-powers*, are not brute individuals in the world, rather, they are things with a certain capacity for a life or character of their own; they are considered to be to some extent animate and possessed of a psychological character. For example, a stone, when dropped, falls because it, in some manner, possesses this tendency of an affinity with the earth; night and day avoid occupying the same house at the same time because they are persons that have some kind of arrangement with each other, etc.

Although such differences should not be overlooked, what is nonetheless striking is the broad structural similarity both between the solutions that Heraclitus and Katz provide, and the views that they attempt to move beyond. As such, what Heraclitus discovered regarding the unity of opposition over two thousand five hundred years ago, should be regarded as being just as important a lesson for, in particular, the philosophy of duality and opposition today as it was then, and it should not be abandoned in haste and without due recognition of the consequences that such a manoeuvre would have for philosophy and rational thought in general.

Appendix: The translations of the fragments of Heraclitus used in this thesis

In this appendix, for the purposes of easy consultation, I shall reproduce in full all of the translations of the fragments of Heraclitus that are quoted in this thesis.¹¹¹ If a fragment is merely mentioned and not quoted then a translation will be quoted here nonetheless. More than one translation is given for some fragments for the purposes of comparison. I also provide an index for each fragment, noting the pages of the thesis on which each is mentioned by number. The fragments are ordered by the standard Diels numbering.

1: pp. [87](#), [94](#)

Although this account holds forever, men ever fail to comprehend, both before hearing it and once they have heard. Although all things come to pass in accordance with this account, men are like the untried when they try such words and works as I set forth, distinguishing each according to its nature and telling how it is. But other men are oblivious of what they do awake, just as they are forgetful of what they do asleep. (Kahn, 1979, p. 29: I)

But of this account, which holds forever, people forever prove uncomprehending, both before they have heard it and when once they have heard it. For, although all things happen in accordance with this account, they are like people without experience when they experience words and deeds such as I set forth, distinguishing <as I do> each thing according to <its> real constitution, ie, pointing out how it is. The rest of mankind, however, fail to be aware of what they do after they wake up just as they forget what they do while asleep. (Robinson, 1987, p. 11)

2: p. [124](#)

Therefore one ought to follow what is common. But although the Logos is common the many live as if they had a religious wisdom of their own. (Marcovich, 1967, p. 91)

That is why one must follow that which is <common> [ie, universal. For 'common' means 'universal']. Though the account is common, the many live, however, as though they had a private understanding. (Robinson, 1987, p. 11)

¹¹¹ All square brackets in this appendix are in the original sources.

3: p. [48](#)

[The sun's] breadth is <that> of a human foot. (Robinson, 1987, p. 11)

8: p. [135](#)

[Heraclitus said that] what opposes unites, [and that the finest attunement stems from things bearing in opposite directions, and that all things come about by strife]. (Robinson, 1987, p. 15)

10: pp. [32](#)-3, [51](#), [65](#)

Things taken together are whole and not whole, something which is being brought together and brought apart, which is in tune and out of tune: out of all things can be made a unity, and out of a unity, all things. (Kirk, 1954, p. 168)

Graspings: wholes and not wholes, convergent divergent, consonant dissonant, from all things one and from one thing all. (Kahn, 1979, p. 85: CXXIV)

12: pp. [86](#), [88](#)-90

As they step into the same rivers, other and still other waters flow upon them. (Kahn, 1979, p. 53: L)

22: p. [78](#)

Seekers of gold dig much earth and find little. (Kahn, 1979, p. 31: VIII)

30: pp. [113](#)-4

<The ordered?> world, the same for all, no god or man made, but it always was, is, and will be, an everliving fire, being kindled in measures and being put out in measures. (Robinson, 1987, p. 25)

31(a): p. [113](#)

Fire's turnings: first, sea, and of sea half <is> earth and half 'burner.' (Robinson, 1987, p. 27)

32: p. [114](#)

One thing, the only wise thing, is unwilling and willing to be called by the name Zeus. (Robinson, 1987, p. 27).

35: p. [22](#)

Men who love wisdom must be good inquirers into many things indeed. (Kahn, 1979, p. 33: IX)

40: p. [50](#)

Much learning does not teach understanding. For it would have taught Hesiod and Pythagoras, and also Xenophanes and Hecataeus. (Kahn, 1979, p. 37: XVIII)

49a: p. [88](#)

We step and do not step into the same rivers; we are and are not. (Robinson, 1987, p. 35).

50: pp. [33](#)–4, [37](#), [53](#)–4, [66](#)

It is wise, listening not to me but to the report (*logos*), to agree <and say> that all things are one. (Kahn, 1979, p. 130: XXXVI)

51: pp. [29](#), [47](#), [62](#), [64](#), [66](#), [95](#), [104](#), [105](#), [135](#)

They do not comprehend how a thing agrees at variance with itself; it is an attunement turning back on itself, like that of the bow and the lyre. (Kahn, 1979, p. 65: LXXVIII)

They do not understand how the diverging agrees with itself: a structure turning back on itself [*palintropos harmoniê*], such as that of the bow or of the lyre. (Hussey, 1999, p. 96)

53: pp. [113](#)–4

War is father of all and king of all; and some he has shown as gods, others men; some he has made slaves, others free. (Kahn, 1979, p. 67: LXXXIII)

57: pp. [47](#)–8, [75](#), [95](#)

The teacher of most is Hesiod. It is him they know as knowing most, who did not recognize day and night: they are one. (Kahn, 1979, p. 37: XIX)

59: p. [59](#)

The path of the carding wheels is straight and crooked. (Kahn, 1979, p. 63: LXXIV)

<The> way of writing <is> straight and crooked. (Robinson, 1987, p. 41)

60: pp. [59](#), [63](#), [75](#), [86](#), [91](#)–2, [95](#), [102](#), [115](#), [141](#)

The way up and down is one and the same. (Kahn, 1979, p. 75: CIII)

A road up <and> down <is> one and the same <road>. (Robinson, 1987, p. 41)

62: p. [113](#)

Immortals are mortal, mortals immortal, living the others' death, dead in the others' life. (Kahn, 1979, p. 71: XCII)

67: pp. [34](#), [51](#), [113](#)–4

The god: day and night, winter and summer, war and peace, satiety and hunger. It alters, as when mingled with perfumes, it gets named according to the pleasure of each one. (Kahn, 1979, p. 85: CXXIII)

80: pp. [32](#), [76](#), [113](#)–4

One must realize that war is shared and Conflict is Justice, and that all things come to pass (and are ordained?) in accordance with conflict. (Kahn, 1979, p. 67: LXXXII)

81(a): p. [50](#)

[According to Heraclitus, Pythagoras is] chief captain of swindlers. (Robinson, 1987, p. 51)

88: p. [114](#)

The same ... : living and dead, and the waking and the sleeping, and young and old. For these transposed are those, and those transposed again are these. (Kahn, 1979, p. 71: XCIII)

90: pp. [66](#), [75](#), [78–9](#), [107–8](#), [110](#), [113](#), [115](#)

All things are an exchange for fire and fire for all things, as goods for gold and gold for goods. (Mourelatos, 2008, p. 321)

91: p. [88](#)

[[One cannot step twice into the same river, nor can one grasp any mortal substance in a stable condition, but it scatters and again gathers; it forms and dissolves, and approaches and departs.]] (Kahn, 1979, p. 53: LI)

99: p. [48](#)

If there were no sun, it would be night. (Kahn, 1979, p. 51: XLVI)

102: pp. [31](#), [113–4](#)

To god all things are fair and just, whereas humans have supposed that some things are unjust, others things just. (Robinson, 1987, p. 61)

103: p. [59](#)

In the case of a circle[’s circumference] beginning and end are common. (Robinson, 1987, p. 61)

For together: origin and boundary at the periphery of a circle. (Manchester, 2005, p. 149)

125: p. [59](#)

[[Even the potion separates unless it is stirred.]] (Kahn, 1979, p. 65: LXXVII)

126: pp. [75](#), [77](#), [80](#)

Cold things heat up; hot cools down; moist dries up; the parched is soaked. (Mourelatos, 2008, p. 320)

129: p. [50](#)

Pythagoras, son of Mnesarchus, trained himself to the highest degree of all mankind in <the art of> investigation, and having selected these writings constructed a wisdom of his own – a lot of learning, a disreputable <piece of> craftsmanship. (Robinson, 1979, p. 73)

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