INTRODUCTION

Willard Van Orman Quine has probably been the most influential American philosopher of the 20th century. His work spans over seven decades, and covers many domains in philosophy. He has made major contributions to the fields of logic and set theory, philosophy of logic and mathematics, philosophy of language, philosophy of science, epistemology and metaphysics.

Quine's first work in philosophy was in the field of logic. His major contributions are the two set-theoretic systems NF (1936) and ML (1940).[1] These systems were alternatives to the type theory of *Principia Mathematica* or Zermelo's set theory, and are still being studied by mathematicians.[2] An indirect contribution to the field of logic is his strong resistance to modal logic. Quine's objections to the notions of necessity and analyticity have influenced the development of modal logic.[3]

Quine has had an enormous influence on philosophy of mathematics. When Quine entered philosophy there was a discussion on the foundations of mathematics between the schools of intuitionism, formalism, and conventionalism. Quine soon took issue with Carnap's conventionalism in "Truth by convention"[4] (1936). Quine has never joined one of the other schools, but has added new elements that are the basic ones of the contemporary schools of nominalism, platonism, and structuralism.[5] Quine has long been in the shadow of Benacerraf and Putnam in this field. At the moment there seems to be a renewed interest in Quine's work, and most philosophers explicitly refer to Quine's work. This is especially the case for the so-called Putnam-Quine indispensability argument.[6]

Quine's *Word and Object* (1960) is a milestone in the philosophy of language. The book deals with many issues, but is known in the first place for the thesis of the indeterminacy of translation[7]. This thesis states that in translation there is no fact of the matter, or that different translations of a language are possible. The thesis gave rise to extensive discussions. One of the major critics of Quine's behaviourism in linguistics was Noam Chomsky.[8]

In philosophy of science Quine's name is linked to the so-called Quine-Duhem thesis. The discussion of this thesis still continues even after several decades.[9] The thesis goes back to Quine's article "Two dogmas of empiricism" (1951b). He challenged the atomism of the Vienna Circle, and proposed holism instead. He was convinced that sentences are only meaningful in the context of a complete theory. He suggested that it is not possible to test a single hypothesis of a scientific theory without at the same time testing a multitude of other hypotheses. The thesis was boldly expressed in "Two dogmas", but Quine has later mitigated his views in "On empirically equivalent systems of the world" (1975a).

Quine's impact on the fields mentioned has been great, but his views on epistemology have been even more influential. Mainly due to Quine, naturalism has become the prevailing paradigm in epistemology.[10] The Cartesian dream of providing a solid rock-bottom for knowledge has been abandoned. Epistemology is studied as a scientific discipline on a par with psychology or sociology. It is the study of the way human beings construct global theories on the basis of the triggering of their sensory receptors. Anti-foundationalism and the strong belief in the methods and results of science are so common and widespread in contemporary American philosophy that one would almost forget that this is a relatively recent phenomenon. Quine's views,[11] and especially his paper "Epistemology naturalized"[12] (1969c) have determined the outlook of contemporary American philosophy. His naturalism is now spreading to other Continents.

Quine has made important contributions in metaphysics too. His explanation of the notion of existence, and especially his criterion of ontological commitment "to be is to be the value of a variable" is still ubiquitously used in ontology and metaphysics. Later, the inscrutability of reference has been widely contested. In recent years, the interest in Quine's contribution to metaphysics has diminished. As the second word in the title indicates, I intend to scrutinise Quine's ontology. I will give a kaleidoscopic picture of his metaphysical position.

Throughout this work it will be clear that Quine's notion of existence both occurs in logic and in natural language. There is a continued interplay between these semantic and logical (or set-theoretic) issues. The fact that onto-logical issues are related to semantics is expressed in the full title of this work. The phrase "trading ontology for ideology" has been borrowed from Stewart Shapiro.[13] The idea of a trade-off between ontology and ideology goes back to a passage in Quine's "Ontological reduction and the world of number".[14] The term "ideology" appeared for the first time in the paper "Ontology and ideology". The 'ideas' of a theory are expressed in the ideology of a theory. Roughly stated, ontology is the study of the objects of

a theory, while ideology is the study of ideas that can be expressed in it by means of the predicates. The ontology of a theory is the total collection of objects a theory is committed to, and is determined by the values of the variables. The ideology of a theory is the lexicon of its predicates. Ontology and ideology are essentially intertwined to the point that it is impossible to discuss Quine's views on ontology without at the same time discussing his ideology. Throughout this work the continued interplay between ontology and ideology will be highlighted.

The issues dealt with do not cover the full width of Quine's philosophy. I discuss the ideas relevant for Quine's ontological (and ideological) views. This constitutes a central, but still limited, part of the total outlook of Quine's philosophy. Though I offer various mathematical considerations, they cover only a small portion of the contents of his seven books on logic and set theory. The logico-mathematical deductions are left out, and the underlying ideas are only sketched roughly. On the other hand, various popular issues have been omitted or are treated very briefly, because they are of no importance or only secondary importance for the main topic. Quine's philosophy of language is far more elaborated than what a reader without previous knowledge of Quine's views might conclude on the basis of this work. The ten pages and scattered remarks on Quine's naturalism[15] do not give an adequate picture of the importance of Quine's tenet of naturalism (though it suffices to clarify the role of behaviourism-naturalism in Quine's ontological views over the years).

Though I concentrate on the notion of existence only, this does not imply that I have tried to simplify Quine's views for the sake of the exposition. Various considerations play a role and I have tried to provide a more or less complete picture of Quine's views on ontology. Scattered over the various chapters I have presented the denizens of Quine's universe, and the diverse tenets on the basis of which ontological decisions are made. I do not believe that it is possible to reduce Quine's views to some simple tenet. On the other hand, I have emphasised some elements that are the dominant tenets or considerations in the Quinean ontological construction. The length of the third chapter indicates that extensionalism is the major tenet in Quine's ontological deliberations. The fourth chapter highlights the importance of mathematical considerations, and especially the role of Russell's paradox.

At all times I have tried to present Quine's views as fairly as possible. Neither do I have a premeditated intention of exhibiting some major flaw in Quine's reasoning, nor is it my aim to defend Quine against some unjust attacks of adversaries. This has resulted neither in an uncritical reverence of Quine nor in a blind attack on his views. The last chapter consists of two major comments on Quine's ontological construction, based on several

comments made earlier on. I have at all times presented the matter as neutral as possible, and have presented the views that are criticised as adequate and clear as possible.

With hindsight I am astonished that I have been able to write this work. Quine's work has been heavily debated and thoroughly studied. Several monographs and a myriad of articles[16] have been written dealing with Quine's work. I readily admit that my work covers ground that has been addressed in some published articles, though not really many. But it is incomprehensible that, as far as I know, Quine's views on ontology have not yet been carefully and systematically scrutinised. Quine's views concerning translation and analyticity as well as his tenets of naturalism and physicalism have been portrayed in several works by several authors. Monographs have been dedicated to a comparison of Quine's work with Carnap's,[17] Wittgenstein's[18] and even Husserl's[19] views. These monographs contain outstanding work, but ontology is hardly dealt with.[20] Equally surprising is the fact that Quine's philosophy of mathematics is seldom carefully discussed.

The various chapters deal with one central tenet or aspect of Quine's views on ontology. These aspects are presented in the order in which they have appeared in Quine's work. The first chapter is based on "On what there is", the second starts from "Steps toward a constructive nominalism". The third chapter deals with various themes that are related to extensionalism; they occur in *Word and Object*. The fourth chapter is explicitly based on *Set Theory and its Logic*, probably Quine's most austere book on ontology. The inspiration for the fifth chapter is "Ontological relativity". The sixth chapter deals with recent developments and pictures Quine's final view in *From Stimulus to Science*. Significant changes in position related to some particular tenet or aspect over the years will be mentioned in the chapter dealing with this particular aspect.

In the first chapter Quine's criterion of ontological commitment is explained. This criterion determines what is meant by the notion of existence, and is the basis for all ontological decisions that will be explained in further chapters. The criterion states that to be is to be the value of a variable in a logically regimented theory. In the first section the relation between the existential quantifier and the notion of existence is explained. In the second section the role of the variable in cross-reference in relative clauses is highlighted. The existential quantifier and the relative clause are the two roots of objectual reference. In the third section Quine's attitude to the ontologically neutral substitutional construal of quantification is portrayed.

In the second chapter Quine's attitude towards nominalism is sketched. Nominalism is the rejection of all abstract entities. In the first section the nominalist programme of Goodman and Quine in "Steps toward a constructive nominalism" is presented, and in the following section it is shown that the gains in ontology must be paid for in the ideology. The third section gives a historical overview of Quine's attitude towards nominalism. It is shown that Quine soon gave up nominalism and came to accept certain abstract entities, *viz.* sets. In the fourth section entities that are central in nominalism, namely names themselves, are discussed.

In the third chapter the various roles of Quine's extensionalism are explained. Extensionalism is the endorsement of the law of extensionality. Quine has also characterised it as the claim that there is nothing to a class but its members. In this chapter it will be shown that extensionalism plays various roles and appears in various guises in Quine's work. In the first section Quine's notion of identity is pictured. Extensionality is inextricably intertwined with identity. In the second section the connection between identity and extensionality in Quine's early logical work is shown, and the importance of extensionalism for his work in logic and set theory is highlighted. In the third section *res extensae*, *viz.* physical objects, are discussed. These objects are accepted in Quine's ontology because they can be clearly identified by means of their extension in space-time. In the fourth section it is shown that Quine's ideas on kinds and similarity are based on Carnap's extensional characterisation of qualities and quality spaces in *The Logical Structure of the World*. In the fifth section the devastating consequences of extensionalism in semantics are pictured. Meanings cannot be genuine entities because they cannot be identified. In the last section I take stock of Quine's universe. It is shown that all entities can be reduced to physical objects and sets. The chapter ends with a discussion of the relation between physical objects and sets, and it is argued that Quine has not really settled this matter.

In the fourth chapter the immense importance of logical and mathematical considerations in Quine's ontological views are minutely portrayed. In the first section the gradual separation of logic and set theory is sketched, whereby logic becomes ontologically neutral and sets are real objects in the universe. The second section discusses the role of Russell's paradox and the comprehension axioms in set theory. A complete vista of Quine's set-theoretic musings is given. This pondering over existential axioms in set theory has stimulated Quine's interest in ontology. In the third section virtual classes and ultimate classes are presented. These are ontologically deactivated predicates and ontologically reactivated predicates respectively.