

ONTOLOGY AND QUANTIFICATION

Quine's criterion of ontological commitment has played a major role in analytic philosophy in the 20th century. It states that a thing exists, if it is a value of the variables of a logical theory. With this criterion Quine wanted to clarify ontological discussions by precisely determining what it means to say that something exists. Given the criterion, it is possible to decide whether certain kinds of objects exist or not, and to express this decision in such a way that confusion over the ontology of a theory is minimised.

In the first section of this chapter it will be shown what the criterion of ontological commitment "to be is to be the value of a variable" precisely means. It is indicated that the criterion was formulated at a time that Quine was deeply involved in logical investigations. It is subsequently shown how the criterion is based on Russell's theory of descriptions, and how the criterion is related to the first root of reference, the existential quantifier.

In the second section the role of the second root of reference, *viz.* the relative clause, is highlighted. The variable that occurs in the existential quantifier also occurs in the relative clause. In a relative clause it has the task of disambiguating cross-reference. Quine has stressed the importance of this cross-referential role of the variable by working on a reformulation of the logical apparatus with quantifiers into a predicate functor logic. In this predicate functor logic, the cross-referential role of the variable is taken over by predicate functors, and the variables are explained away.

In the last section a distinction is made between the ontologically relevant objectual interpretation of quantification and the ontologically neutral substitutional interpretation. In the objectual version the values of the variables are real existing objects, while the substitutional version makes use of substitutions of expressions only. It is shown how Quine's initial preference for objectual quantification gradually diminishes. In later work, he favours the substitutional version, on condition that nothing essential in science is lost. The difference in strength between objectual quantification

and substitutional quantification involves intricate considerations on denumerability and predicativity.

1. TO BE IS TO BE THE VALUE OF A VARIABLE

Quine's interest in ontology dates from the beginning of his academic career. However, ontological questions scarcely appeared in his first publications. In his first years of philosophical work, in the thirties, Quine almost exclusively wrote articles on logic and set theory, or occasionally on the philosophy of logic.¹ The first paper dealing with ontology, "Ontological remarks on the propositional calculus",² appeared in 1934. From 1939 onward a series of articles on ontology appeared. Ten years later he wrote "On what there is",³ which soon triggered an animated debate in the philosophical community. The slogan "To be is to be the value of a variable"⁴ became a paradigm⁵ in philosophy.

Quine's ideas on ontology did not stem from traditional metaphysical problems. The motivation for thinking about ontology arose from logic. "Ontological remarks on the propositional calculus" investigates the status of logical propositions. Traditionally, it was held that sentences denote propositions. These could be taken to be facts, or judgements, or abstract possibilities, and so on. Quine rejects the traditional view. He equates propositions and sentences. Propositional identity is possible by geometrical similarity or conventional correspondence of written marks. The sentences become the elements⁶ of the logical system, and the *denotata* of sentences are rejected as spurious logical entities. In this early paper there is no real reflection on ontology. The paper is an attack on the notion of proposition, and no elaborated ontological apparatus is required for this. No indications are given on what criteria have to be fulfilled for entities to be acceptable.

After obtaining his Ph.D., Quine was awarded Harvard's Sheldon Traveling Fellowship that allowed him to visit Europe in 1933. In his months in Europe he met several philosophers of the Vienna Circle, and collaborated for a while with Carnap. These contacts strongly influenced Quine's philosophical thought in several fields, but their impact would only become apparent more than fifteen years later.⁷ His stay in Warsaw, where he met the Polish school of logicians of Tarski, Łukasiewicz, and Leśniewski, was of more immediate importance. Discussions with Leśniewski⁸ on quantification kindled Quine's interest in ontology. Contrary to Leśniewski, he was convinced that an ontological commitment to certain entities is unavoidable in logic. He did not merely solve ontological

problems with a logical apparatus, but the ontological problems themselves were logical problems.⁹ Reflection on quantification sharpened Quine's ontological insights.

In 1939 Quine unfolded his ontological theory for the first time in two related texts, viz. "Designation and existence" and "A logistical approach to the ontological problem". He wanted to clarify notions such as existence, reference, singular, general, concrete, abstract. He saw quantification as a means of giving a clear and precise content to the notion of existence. The two papers give an adequate and complete account of the way Quine sees the relation between quantification and existence. Little of what is written in these papers has been revoked later. Apart from length, rhetoric, and philosophical impact, little difference can be found between these two papers and "On what there is".

Quine set out to answer a question that was at the same time banal and megalomaniac:

A curious thing about the ontological problem is its simplicity. It can be put in three Anglo-Saxon monosyllables: 'What is there?' It can be answered moreover, in a word – 'Everything' – and everyone will accept this answer as true. However, this is merely to say that there is what there is. There remains room for disagreement over cases; and so the issue has stayed alive down the centuries.¹⁰

Ontological problems have played a major role in the history of philosophy. A motley gallery of philosophers has taken up the question and has ventured answers: Plato, Aristotle, mediaeval nominalists and realists, materialists and idealists, ... In most parts of contemporary philosophy ontological questions still raise interest.

The discussion on what there is has a negative counterpart. We can reflect on what there is not. For centuries the quandary over what to do with spurious entities such as Pegasus or the square circle has persisted. Deciding on the truth-value of the sentence "Pegasus does not exist" is not easy. To say of Pegasus that it does not exist implies that we say something about Pegasus. This suggests there has to be something we speak about. Pegasus must have some kind of existence, otherwise we would not be able to speak about it. Quine wittily nicknamed this problem "*Plato's beard*"¹¹. Two dissatisfactory solutions prevailed. The one was to separate real existence₁ and a more shadowy existence₂. This implied that existence is not a simple notion, but is divided into two kinds of existence, and that Pegasus does exist₂ after all. The alternative is not to use existence as a predicate.¹² In this case, it is no longer possible to deny that Pegasus exists.

The main importance of Quine's papers does not lie in the answer he gives to the question "What is there?", but in the way he reformulates the

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