

NOMINALISM AND REALISM

We are ontologically committed to the objects that are the values of the variables in theories. They are the objects that have been posited in the theories that have been constructed. Theories are not *a priori*, but human constructions. Therefore there is no ready-made ontology, but ontology is dependent on the current state of accepted scientific theories. This implies that ontology is connected with epistemology, which deals with the development of knowledge and scientific theories.

Quine has written a lot on epistemology and theory construction, and has professed a naturalised epistemology. It would lead too far to present a complete picture of Quine's epistemology. For the present purpose it is only important to know that Quine embraces several epistemic virtues. These virtues are methodological guidelines in scientific research; good research is in accordance with them. Quine mentions virtues¹ as 'conservatism', 'modesty', 'simplicity', 'generality', 'refutability', 'economy', 'naturalness'. There are also other tenets that play a role in Quine's epistemology, such as 'naturalism', 'behaviourism', 'physicalism', or 'relative empiricism'.²

Two epistemological tenets are of special importance for Quine's ontology, *viz.* extensionalism and nominalism. They are epistemological tenets because they determine the outlook of scientific theories. They are relevant in ontology, since they put heavy restraints on the ontology of theories. For Quine, a first extremely important ontological maxim is "No entity without identity". Precise identity criteria are of utmost importance in the positing of objects. I will elaborate this tenet of extensionalism in the next chapter. In this chapter I will deal with Quine's nominalism. I will consider two intertwined Quinean preferences, that are the core of his nominalism. The first is Quine's preference of the concrete above the abstract. The second is Quine's ontological parsimony, a preference for small universes. This parsimony is related to the virtues of economy and

modesty. Quine wanted to develop an ontology with a minimum of abstract objects, and if possible with concrete physical objects only.

The nominalistic project was carried out together with Nelson Goodman in the paper "Steps toward a constructive nominalism", but eventually it failed. The programme was not only interesting from an ontological point but it serves well to illustrate some ideological themes. During some years Quine wavered between nominalism, conceptualism and platonism. Eventually he acquiesced in the indispensability of sets, and thus accepted abstract objects. As a corollary to this sketch of Quine's nominalism and a bridge to the next chapter that deals with the individuation of entities, I will clarify the ontological status of names and expressions in Quine's philosophy.

1. A NOMINALISTIC PROGRAMME

Already in "Designation and existence" (1939a) the nominalist comes to the fore.³ Quine gives the following definition of nominalism:

As a thesis in the philosophy of science, nominalism can be formulated thus: it is possible to set up a nominalistic language in which all of natural science can be expressed. The nominalist, so interpreted, claims that a language adequate to all scientific purposes can be framed in such a way that its variables admit only concrete objects, individuals, as values - hence only proper names of concrete objects as substituends ... Indeed, the nominalist need not even forego the convenience of variables having abstract entities as values, or abstract terms as substituends, provided he can explain this usage as a mere manner of speaking.⁴

Quine's sympathy for nominalism is apparent throughout the text, but Quine never explicitly professes himself a nominalist. The text ends with the warning that the nominalist should be able to show that his abstract terms are only a manner of speaking, and can be rephrased in a nominalistic language. If he can't provide this rephrasing he may plead that he only uses fictions, but "this plea is no more than an incantation, a crossing of the fingers".⁵

Quine, together with Nelson Goodman, has elaborated this programme of rephrasing all scientific theories in a language with an ontology consisting of objects in space-time. This task is carried out in their article "Steps toward a constructive nominalism". In the beginning of this article Quine and Goodman state their project:

We do not believe in abstract entities. No one supposes that abstract entities - classes, relations, properties, etc. - exist in space-time; but we mean more than this.

We renounce them altogether ... we cannot use variables that call for abstract objects as values ... Any system that countenances abstract entities we deem unsatisfactory as a final philosophy...

Why do we refuse to admit the abstract objects that mathematics needs? Fundamentally this refusal is based on a philosophical intuition that cannot be justified by appeal to anything more ultimate. It is fortified, however, by certain *a posteriori* considerations. What seems to be the most natural principle for abstracting classes or properties leads to paradoxes. Escape from the paradoxes can apparently be effected only by recourse to alternative rules whose artificiality and arbitrariness arouse suspicion that we are lost in a world of make-believe.⁶

The authors espouse a full-fledged nominalism. They only accept concrete objects, and renounce all abstract objects. By doing so they must provide a nominalistic account of useful abstract terms. Especially mathematics is a challenge for any nominalist. It is unacceptable to dismiss mathematics as a whole, but mathematics seemingly involves the use of abstract objects such as numbers, functions, sets, ... The aim of the authors was to supply a constructive method to build up mathematics on the basis of concrete objects alone.⁷ If there are no abstract mathematical objects, then numbers, functions, sets, ... must be given an appropriate account in a nominalistic setting. This involves finding new means for definitions, because the classical definitions draw heavily on platonistic devices. The problem is exacerbated because Quine and Goodman refuse to countenance an infinite number of concrete objects. They write that there was no general agreement between physicists in the debate whether there are more than finitely many objects in space-time.⁸ This of course implies that classical mathematics is curtailed.

The translation of certain abstract sentences in terms of concrete objects is not really problematic. One can easily reformulate the sentence "Class A is included in Class B" as "Everything that is an A is a B".⁹ At first glance, the classes A and B in the first sentence can be regarded as abstract objects. Rephrasing the sentence shows that no classes need to be assumed for stating this sentence. The only objects that we need for stating the sentence are the values of the "everything", or in other words, the things that might be an A, or the things that might be a B. In this example the abstract term "class" is eliminated. Quine and Goodman give several other examples of this kind in which abstract terms are eliminated. For example, also numbers can be eliminated. The sentence "Class A has three members" has the following translation¹⁰:

$$(\exists x)(\exists y)(\exists z)((x \neq y) \wedge (y \neq z) \wedge (x \neq z) \wedge ((w)(Aw \equiv ((w=x) \vee (w=y) \vee (w=z))))))$$

Trading Ontology for Ideology

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