

Introduction

Those long chains composed of very simple and easy reasonings, which geometers customarily use to arrive at their most difficult demonstrations, had given me occasion to suppose that all the things which can fall under human knowledge are interconnected in the same way. And I thought that, provided we refrain from accepting anything as true which is not, and always keep to the order required for deducing one thing from another, there can be nothing too remote to be reached in the end or too well hidden to be discovered.

(René Descartes, *Discourse on the Method*, AT VI/19, CSM I/120)

Not everyone shares Descartes' optimism as to how much knowledge can be gained by deductive reasoning from known premises. But the pessimism usually centres on questions of whether there are any premises secure enough to serve as a point of departure or doubts as to whether the premises available are rich enough for us to arrive at anything interesting. Seldom is the very possibility of arriving at instances of knowledge by reasoning from known premises called into doubt. Among the many contentious issues surrounding the concept of knowledge, the opinion that it is possible to extend knowledge by deduction stands out as remarkably uncontroversial. It appears to be an integral part of our idea of knowledge that knowledge expands systematically (or is at least capable of thus expanding in favourable circumstances). Part of our ideal of knowledge is that it has a cumulative nature. However, we do not just conceive of this accumulation as any quantitative increase, but rather our ideals contain the element of ordered growth. And more than that, we do not aim at just any order, say a chronological order (according to when we acquired a certain item of knowledge) or an alphabetical one, but rather our ideals demand an order which is based on the logical relations between the propositions known. This conception is also expressed in the metaphors we use in speaking about knowledge. The picture of the edifice of knowledge, with foundations supporting further elements of the building, the picture of the tree of knowledge with its roots, trunk and the various branches of knowledge (both pictures associated with

foundationalist models of knowledge) as well as the picture of the raft of the coherentist – all these metaphors share the feature that they compare the whole of our knowledge to something that has an internal organization. In other words, they liken it to something that forms a structured whole. In those pictures the relations on the metaphoric level stand for the logical relations within the realm of knowledge.

We assume that deducing some proposition from known premises endows the inferred proposition with the status of knowledge. Furthermore, knowledge of this kind seems to many to be the very paradigm of knowledge. The richness within the realm of logical relations between propositions is thought to transfer onto our knowledge of them. If I know a number of propositions, then I am also entitled to ascribe the epistemic status of knowledge to everything that I know to be entailed by them. If, for example, I know that Peter was born in London and I also know that the fact that Peter was born in London entails that he was born in Britain, then I also know that Peter was born in Britain. Generally, it seems natural that I should be allowed to extend my knowledge from the initial propositions to their logical consequences, provided I know that the entailment holds. In other words: if I know that p and I know that p entails q , then I also know that q . This feature, which guarantees the epistemic status of our inferences and which is so naturally bound up with our concept of knowledge, is called ‘deductive closure of knowledge’.¹

However, as so often, a feature we prize highly in our concept of knowledge contributes to its undoing by the sceptic. The issue of deductive closure has come into focus recently because of its role in some of the most famous sceptical arguments, such as the argument of the malicious demon or of his famous modern cousin, the evil scientist, who keeps ‘brains-in-vats’, or the version of the dream argument put forward by Stroud (1984).² If we abbreviate the holding of any of these sceptical scenarios (e.g. we are brains in a vat, we are dreaming etc.) as SP , the sceptical arguments have roughly the following structure:

- (1) S knows that p entails that not SP .
- (2) S does not know that not SP .
- (3) S does not know that p .

¹ I shall say a little more on the formulation as well as the name of the principle shortly.

² Some people even say all sceptical arguments depend on deductive closure, see e.g. NOZICK (1981, 204); DRETSKE (1970, 1011) believes ‘almost all’ sceptical arguments turn on it.