

THE GETTIER PROBLEM

SUPPLEMENTARY HANDOUT ON DISJUNCTION INTRODUCTION

Case 2

We have said that the three propositions are *inferred* from (c); and in doing so, we have suggested that there is an argument that has taken place. Take proposition (d): either Jones owns a Ford, or Brown is in Boston. This is a conclusion that is entailed from (c) by the rule of **disjunction introduction**.

Such a disjunction is the logical principle that if P is true, then it is true that either P or Q is true. It is a valid, simple argument form in logic.

Formally, it can be presented as follows:

P.

Therefore, P or Q.

In our case, the argument can be constructed as follows:

P (Jones own a Ford).

Therefore, P (Jones own a Ford) or Q (Brown is in Boston).

The argument form has one premise, P, and an unrelated proposition, Q. From the premise it can be logically concluded that either P or Q is true, or both are true. Here is another example of such an argument:

Socrates is a man.

Therefore, Socrates is a man, or pigs are flying over the English Channel (either or both are true, but in this case only one is true).

Such a disjunction is true whenever *one or more* of its operands are true. In other words, 'P or Q' is true if P, Q, or both P and Q are true. Such a disjunction is false if both P and Q are false. (It is sometimes known as inclusive disjunction.)

Consider one of Smith's conclusions: (d) either Jones owns a Ford, or Brown is in Boston. Since a disjunction is true if at least one of the terms is true, and we know that one of the terms is true (that Jones owns a Ford), the second term is irrelevant for determining the truth-value of the disjunction (the second term in this case would be that Brown is in Boston).

Note that in ordinary language, the term 'or' sometimes has the meaning of exclusive disjunction. This is a type of logical disjunction that results in a value of true if and only if exactly one of the operands has a value of true. A simple way to put this is 'one or the other, but not both'. So, in ordinary speech, 'either... or...' can mean 'either... or... but not both'; in this sense it excludes both being true. This use of 'or' is sometimes called '**the exclusive use**'. But in logic it can mean 'and / or'. This latter use is the inclusive use of 'or'.