1 What is Logic ?

1.1 What is an argument?

By argument "argument" we mean, roughly, a chain of reasoning in support of a certain conclusion. So we must distinguish arguments from mere disagreements and disputes.

1.2 What sort of evaluation?

The business of logic, then, is the evaluation of stretches of reasoning. Let's take a vey simple case (call it argument A).

(1) *All philosophers are eccentric.*

I then introduce you to Jack, who I tell you is a philosopher. So you come to believe

(2) *Jack is a philosopher*

Puttinh these two thoughts togeether, you can obviously draw the conclusion

(3) Jack is eccentric

This little bit of reasoning cannow be evaluated along two quite independent dimensions.

- First, we can ask whether the *premises* (1) and (2) are true
- Second, we can ask about the qality of the *inference* from the premisses (1) and (2) to the conclusion (3) is surely absolutely comeplling. If (1) and (2) are granted to be true (granted "for the sake of argument" , as we say), then (3) has to go to be true too. Someone who asserted that Jack is a philosopher, and that all philosophers are eccentrinc, yet

went on to deny that Jack is eccentric, would be implicitly contradicting himself.

In brief, it is one thing to consider whether an argument starts from true premisses; it is another thing entirely to consider whether it moves on by reliable inferential steps. We normally want to start from true permisses and to reason by steps which will take us on to further truths.

The premisses (and conslusions) of arguments can be about all sorts of topics: their truth is usually no business of the logician, by contrast, is not the truth of initial premisses but the way we argue from a given starting point. Logic is not about whether our premisses are true but about whether our inferences really do support our conclusions once the premisses are granted. It is in this sense that logic is concerned with the 'internal cogency' of our reasoning.

1.3 Deduction vs. induction

As a first shot definition, we will say

Definition 1.1. An inferece step is *deductively valid* just, if given that its premisses are true, then its conclusion is absolutely guaranteed to be true as well.

Equivalently, when an inference is deductively valid, we'll say that the premisses *logically entail* the conclusion.

Definition 1.2. The extrapolation from the past to the future, or more generally from old cases to new cases, is standarly called *inductive*