Chapter 3. Logical notions.

As before, we think of the formulas of our language as representing the logical forms of sentences (on a nominalistic approach) or of propositions (on a platonistic approach). We can distinguish two senses in which two formulas can be taken to be equivalent in regard to form: they are weakly equivalent if they represent the same form; they are strongly equivalent if, in addition, interchange of one for the other in a formula preserves the form that the formula represents. Thus $\neg p$ and $\neg q$ are weakly equivalent; and there are no distinct formulas from sentential logic that are strongly equivalent. However, $\forall xFx$ and $\forall yFy$ are strongly equivalent. Not only do they represent the same form, such pairs of formulas as $(\forall xFx \vee \forall yFy)$ and $(\forall xFx \vee \forall xFx)$ also represent the same form. In general, alphabetic variants are taken to be strongly equivalent. If the forms that they represent are the same, then the instances of these form must be the same; and so our conception of an instance of these forms must not depend in any essential way on the identity of type between bound occurrences of variables that are not linked. It is not obvious what this notion of instance should be taken to be; one proposal will be given below.

There is a problem over how metaformulas using the notational devices we introduced above represent formulas. The "instances" of $\forall xA(x) \supset A(y)$, for example, are not obtained by any straightforward substitutions of object symbols for metasymbols and, indeed, it may be shown (problem ***) that no strictly schematic formulation of predicate logic is possible.