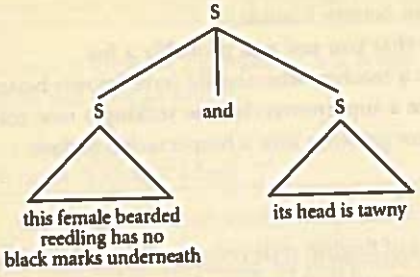
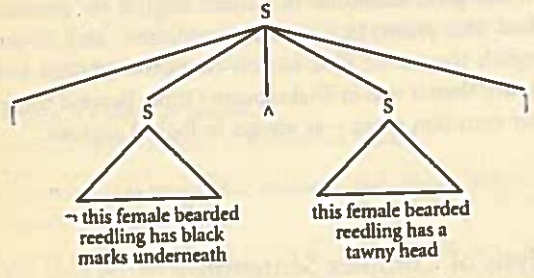
The answer is a matter of scope. In (19.1) the scope of 'and' is the whole sentence:

19.4



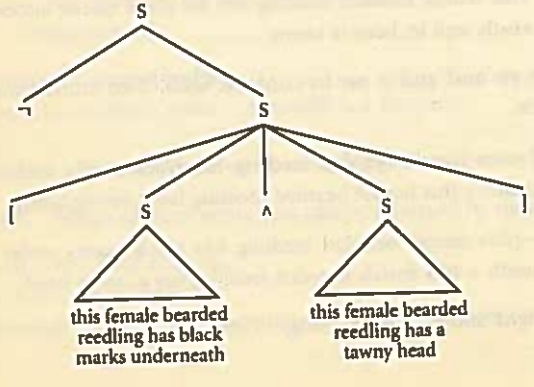
We shall express this by saying that the *overall form* of (19.1) is 'ϕ and ψ'. The correct translation (19.2) likewise has the overall form '[$\phi \wedge \psi$]':

19.5



But in the incorrect translation, the scope of '∧' is only part of the sentence, and the overall form is '¬ ϕ':

19.6



This example shows why we included the two brackets in our notation; without them it would be impossible to tell whether the scope of '∧' included '¬' or not.

To translate a complex sentence with more than one truth-functor, *start with the truth-functor of largest scope, as shown by the overall form of the sentence; then work inwards.*

The following example will show how. We shall translate:

> If the battery is flat, then the starter will be dead, and you won't get the car started unless we push it. *19.7*

We first look for the overall form of (19.7). Does it say 'If ϕ then ψ' or 'ϕ and ψ', or 'It's not true that ϕ', or what? On the natural reading, the part after 'then' forms a unit, so the answer is 'If ϕ then ψ'. The truth-functor of largest scope will be an arrow, and we can write

> [the battery is flat → the starter will be dead, and you won't get the car started unless we push it] *19.8*

Next we find the largest constituent sentence which has no truth-functor symbols in it:

> The starter will be dead, and you won't get the car started unless we push it. *19.9*

This has the overall form 'ϕ and ψ', so that the truth-functor of largest scope in the translation of (19.9) will be conjunction:

> [the starter will be dead ∧ you won't get the car started unless we push it] *19.10*

The longest unanalysed constituent sentence of (19.10) is

> You won't get the car started unless we push it. *19.11*

The overall form of (19.11) is 'ϕ unless ψ'. Remembering to remove the cross-referencing as we introduce '∨', we write

> [you won't get the car started ∨ we'll push the car] *19.12*

There remains

> You won't get the car started. *19.13*
> ¬you'll get the car started.