

18. Special Problems with '→' and '∧'

The truth-functor symbols '→' and '∧' raise some special problems, which deserve a few words of warning. The points at issue are fairly subtle; this section can be left out without breaking the continuity.

We begin with '→':

In a sentence of the form 'If A then B', we often find cross-referencing from B to A, and it may be impossible to paraphrase so as to remove the cross-referencing. Here's a fairly mild example:

If the tonsils are removed, the adenoids are often cut out 18.1
too.

If we ask 'Which adenoids?', the answer is: the adenoids of whoever has his or her tonsils cut out. But thousands of people have their tonsils cut out, so that there is no question of finding a phrase which pins us down to just one set of adenoids. Even if we could find one, we should hardly interpret (18.1) as saying that one particular person's adenoids are often cut out! So we must not analyse (18.1) as

[the tonsils are removed → the adenoids are often cut out]. 18.2

For similar reasons we must avoid such translations as the following:

If you poured in the sulfuric acid, the solution would turn muddy. 18.3

NOT: [you poured in the sulfuric acid → the solution would turn muddy]

If you had poured in the sulfuric acid, the solution would have turned muddy. 18.4

NOT: [you had poured in the sulfuric acid → the solution would have turned muddy]

The English sentences in (18.3) and (18.4) are examples of *subjunctive conditionals*; they say what would happen in hypothetical states of affairs. The second clause refers to the hypothetical state of affairs described by the first clause, so that there is a cross-reference.

Exercise 18A. Which of these sentences (with apologies to Dr Spock) can be translated by means of '→' without cross-referencing?

1. If the nappies are becoming hard, you can soften them by using a water conditioner.
2. If it contains soap, this helps in removing stains.
3. If an injured child has not already built his own protection from toxoid inoculations, it is sometimes hard to decide whether horse serum is necessary.
4. If most of his former protection has worn off, his new vaccination develops much like the previous one.
5. If a vaccination doesn't take, it doesn't mean that the person is immune.
6. If your baby is colicky, he may be soothed when you first pick him up.

We turn to '∧':

The symbol '∧' can sometimes be used to eliminate the relative pronouns *which* and *who*. For example,

The policeman, who was watching through binoculars, ducked just in time. 18.5

can be analysed as

[the policeman was watching through binoculars ∧ the policeman ducked just in time] 18.6

See (17.13) for another example.

However, there is another sentence very like (18.5), which must not be analysed in this way. The sentence is

The policeman who was watching through binoculars ducked just in time. 18.7

(Note the commas.) As it occurs in (18.7), the phrase 'who was watching through binoculars' serves to indicate which of several policemen is being talked about; in this use it is said to be *restrictive*. The same phrase in (18.5) serves, not to pick out one policeman from several, but to say something about a policeman who has already been picked out; we say it is *non-restrictive* in (18.5). The truth-functor symbol '∧' *must not be used to replace which or who in restrictive phrases*.