

These two CF grammars are therefore reasonable grammars for two fragments of English. (They might well seem less reasonable if we tried to extend them to cover larger classes of grammatical sentences.)

It's interesting to note that both these two CF grammars generate infinitely many different strings. In (15.3), rule 3 can be applied over and over again, as many times as we like; each time we apply it, the effect is to add another 'old'. Thus the grammar generates sentences such as

The old old old old fool ignored this sentence. 15.12

In the CF grammar of Exercise 15A, rule 4 has a similar effect.

**Exercise 15C.** A one-year-old child is overheard making the following remarks:

boy. sock. mommy. allgone boy. allgone mommy. byebye  
sock. byebye mommy. boy off. sock off. sock on.  
mommy on. mommy fall.

Construct an appropriate CF grammar for the language of this child. (Remember that these are only a sample of what the child can produce; you have to work out what the implicit rules are.)

## Logical Analysis

In the next four sections we encounter one of the chief skills of logic: that of logical analysis. We first select a small number of ways of combining short sentences into longer sentences. Then we show that very many sentences, if they are not already built up in these ways, mean the same as certain other sentences which are so built up. *Logical analysis* consists in finding these other sentences; it stands somewhere between translating and paraphrasing.

Though logicians agree about how to analyse, they disagree about the purpose. Some regard themselves as uncovering the 'real form' of the sentence they analyse, while others see logical analysis as part of an enterprise to replace English by a new and more rational language. We need not enter the controversy; for us the justification is that a tableau for logically analysed sentences can be constructed quite mechanically, according to strict mathematical rules.

### 16. Sentence-functors and Truth-functors

Some of the sentences in the examples of section 10 were particularly easy to handle, because they had shorter constituents which were sentences. For example,

[Cobalt is present] but [only a green colour appears]. 16.1

(The constituent sentences are marked with square brackets.) We can analyse such a sentence into its constituent sentences

Cobalt is present.

Only a green colour appears.

16.2