

2.1.s. Summary

The prime role of the logical word *and* is to mark the use of a **connective**, called **conjunction**, that serves to form a **compound sentence** (also called a **conjunction**) from **component sentences** that may be referred to as its **conjuncts**. The process of interpreting a sentence as a conjunction is **analysis**. We use the sign \wedge (**logical and**) as symbolic notation for the operation of conjunction, marking the scope of a conjunction by parentheses. Alternatively, we can write a conjunction $\phi \wedge \psi$ as **both** ϕ **and** ψ , where **both** plays the role of a left parenthesis. The two forms can be mixed using **and** to mark conjunction and parentheses to mark scope. We will use capital letters to stand for unanalyzed components as we use lower case Greek to stand for any sentences, analyzed or not.

The effect of conjunction on the truth conditions of the compounds formed using it may be described in a **truth table** showing the compound to be true if and only if both components are true. The truth table specifies a **truth function**, so conjunction can be said to have a truth function as its meaning.

ϕ	ψ	$\phi \wedge \psi$
T	T	T
T	F	F
F	T	F
F	F	F

Conjunction is marked in English by stylistic variants of *and* as well as by *but* and similar words. Conjunction also can appear without explicit indication, particularly through the use of modifiers like **attributive adjectives**—though **care is needed** to be sure that such modifications can be captured by conjunction and to identify components that make independent contributions to the compound. The presence of **quantifier words** can preclude analysis as a conjunction even when the word *and* is present.

Since conjunction is used to combine only two components, uses of conjunction to combine more than two in a **multiple conjunction** will involve two or more connectives of differing **scope**, the one with **widest scope** counting as the **main connective** of the sentence. Such differences in scope can be marked in several ways in English but such markings may be absent in a **serial conjunction**. Some of the effect of serial conjunction without scope distinctions can be achieved by **run-on conjunctions**, such as $\phi \wedge \psi \wedge \chi$, which suppress parentheses.

The analysis of the logical form of a sentence can occur in stages in which we identify the **immediate components** of a compound, any immediate components of these, and so on. The last components arrived at are the **ultimate components** of the analysis; the full class of **components** includes them as well as all other sentences that could

appear in the course of analysis (including the analyzed sentence itself). A sentence will usually have many logical forms representing different partial analyses of it.

We can specify a proposition or a truth value for a logical form by means of an intensional or extensional interpretation, assigning truth values or sentences, respectively, to its ultimate components. A sentence expressing the proposition provided by an intensional interpretation can be found by carrying out a process of synthesis that reverses the process of analysis. The truth value provided by an extensional interpretation can be found by calculation using the truth table for conjunction. The tabular notation used to write the truth table of conjunction may be used also to describe extensional interpretations and the values that they give to compound forms.

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