

Part-whole relations in syntax

To appear in *Handbook of mereology*,  
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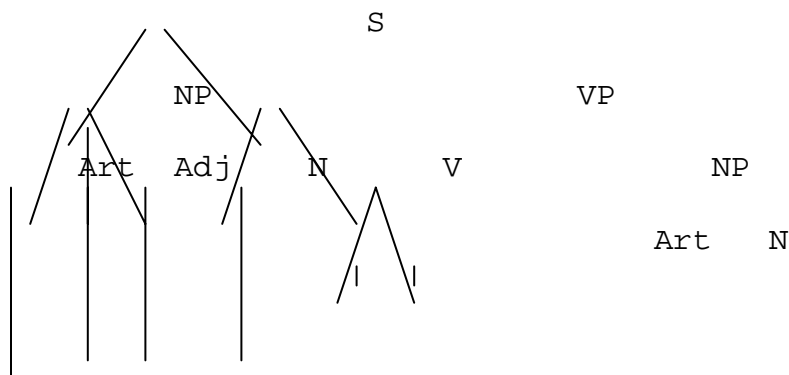
The conceptual tool of part-whole relations resolves a paradox: it allows for something to be declared both "one" and "many" at the same time. On the one hand, it enables us to analyze one thing as more than one if we decompose it into parts. On the other hand, it allows us to view many things as one if we posit a single whole that they are parts of. Both analytic steps yield generalizations: wholes that appear distinct may turn out to be similar by sharing some of their parts, and assemblages of different things may form wholes that are in some respects alike.

Both directions of mereological argumentation have found abundant application in the analysis of sentence structure as well. First, it is useful to break sentences into words: the two sentences *Bill arrived* and *Bill left* are distinct as wholes but similar in that they both include the word *Bill* as their subject. Second, sequences of words can act jointly as single units. For example, an entire clause functions as the subject of the sentence ***That he arrived surprised me.***

All syntacticians posit sentences as wholes and words as their parts. Syntacticians nonetheless differ regarding additional levels of structure: whether sentences are to be analyzed as parts within the larger whole of discourse and whether there are intermediate-level units between word and sentence. Many contemporary frameworks follow the predominant tradition of taking the sentence as the highest-level syntactic whole and most posit intermediate-level units: clauses (such as the clause *that it was late* in *I told you that it was late*) and phrases (such as the verb phrase *told you* in this sentence).

Mereological structure in syntax is called constituent structure or phrase structure. (1) shows a phrase structure tree of a sentence complete with category labels.

(1)



*The white seagull caught the fly.*

Syntactic characteristics of words that form phrases or clauses include joint recurrence in and across sentences; joint non-occurrence (replaceability or omissibility); and adjacency. These criteria of syntactic mereological structure are illustrated in (2) for the noun phrase.

- (2) (a) RECURRENCE IN AND ACROSS SENTENCES:  
    (i) [**The guests**]<sub>NP</sub> read [**the book**]<sub>NP</sub>.  
    (ii) [**The guests**]<sub>NP</sub> are tired.
- (b) JOINT REPLACEABILITY BY A PRO-FORM:  
    [**The guests**]<sub>NP</sub> arrived and **they** left immediately.
- (c) JOINT OMISSIBILITY  
    [**The guests**]<sub>NP</sub> arrived and \_\_\_ left immediately.
- (d) ADJACENCY  
    (i) [**The guests**]<sub>NP</sub> arrived.  
    (ii) \***The** arrived **guests**.

Without positing the concept noun phrase, rules about which word sequences can be subjects and objects, which can be replaced by pronouns or left out, and which must be contiguous would have to be stated by listing the individual word types, as in (3). The concept noun phrase simplifies these rules, as in (4).

- (3) (a) A subject must be a noun, or an article and a noun, or an article and an adjective and a noun, etc.  
    (b) A pronoun may replace a noun, or an article and a noun, or an article and an adjective and a noun, etc.
- (4) (a) A subject must be a noun phrase.  
    (b) A pronoun may replace a noun phrase.  
    (c) A noun phrase is a noun or an article and a noun or an article and an adjective and a noun, etc.

While the mereological analysis of sentences enhances the generality of descriptions, constituent structure introduces problems of its own because not all syntactic part-whole relations are simple. Simple systems would involve only two sister parts for each whole, no further parts within parts, parts that are equal, parts that are adjacent, each part uniquely assigned to a single whole, and wholes that are compositional (i.e., their properties are the sum of the properties of the parts and their

relations) (cf. Moravcsik 2006). We will look at two complex mereological patterns that exceed one or the other of these characteristics.

Words in a phrase or clause may not be contiguous. **Discontinuous constituency** has been a central problem in syntactic theorizing (Huck & Ojeda 1987). For example, (5) and (6) show that the English noun and relative clause may or may not be adjacent.

- (5) (a) **The man that came to see me** is German.  
(b) **The man** is German **that came to see me**.

Yet, for purposes of replaceability, noun and relative clause form a phrase whether they are adjacent or not.

- (6) (a) **The man that came to see me** is German. **He** was kind.  
(b) **The man** is German **that came to see me**. **He** was kind.

Some versions of transformational generative grammar solve the problem by assigning two constituent structures to sentences like (5b). Surface structure has the relative clause separated from the noun but in the underlying structure, the clause is adjacent to the noun, just as in (5a). Underlying structure thus regularizes the linearly deviant construction (see for example Jacobs & Rosenbaum 1968). Other analyses (e.g. Sadock 1987) assume that the non-adjacent noun and relative clause do not form a unique phrase in syntax but they do so in semantics.

Another complex syntactic mereological pattern is a part simultaneously belonging to two wholes. Thus, in *Jill expects him to succeed*, the pronoun *him* belongs both to the main clause *Jill expects him* and to the subordinate clause *him to succeed*. Such instances of what is called **multiple motherhood** have again been dealt with differently in various syntactic theories. In some versions of transformational grammar, *him* is the subject of the subordinate clause in underlying structure and is subsequently "raised" into the main clause by a transformation (Postal 1974). In Word Grammar in turn, which does not assume phrasal units, *him* is represented as simultaneously dependent on both verbs: *expects* and *succeed* (Hudson 1984: 112).

In sum: mereological analysis in syntax solves some problems in syntax and poses others. Many of the differences among syntactic theories boil down to varying

assumptions about the exact nature of constituent structure and the ways of resolving its complexities.

#### Further readings

- Huck & Ojeda 1987: papers on discontinuous constituents;  
Jacobson 1996: a synopsis of theories of syntactic constituent structure;  
Langacker 1997: a less constrained concept of constituent structure.

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