Introduction to Transformational Grammar, LINGUIST 601
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Elementary Operations

1 Elementary Operations

This discussion is based on Chomsky (1998):49-52.

1.1 Merge

Merge is the most basic syntactic operation. We will distinguish between two kinds of Merge: set-merge, which introduces arguments, and pair-merge, which introduces adjuncts.

(1) Let K be the result of Merging α and β.

a. Set-Merge: $K =$ set-merge(α,β) = $\{\Gamma, \{\alpha, \beta\}\}$.
where Γ is the label of K, which is determined by α and β.

When α and β set-merge, it is to satisfy requirements of one of them. If the requirements of α are being satisfied, α projects i.e. Γ = label(K) = label(α).

requirements of α: can be uninterpretable subcategorization features, as well as semantic requirements such as θ-roles.

b. Pair-Merge: $K =$ pair-merge(α,β) = $\{\Gamma, <\alpha, \beta>\}$.
where Γ is the label of K, which is determined by α and β.

Pair-Merge is inherently asymmetric - if the operation of Pair-Merge adjoins α to β to form $\{\Gamma, <\alpha, \beta>\}$, we can conclude that β projects i.e. Γ = label(K) = label(β).

- For any lexical item α, label(α) = α
- If the label information is predictable, we do not need to explicitly represent it.

(2) Let label(K) $= \alpha$ and β be a term of K introduced by set-merge.

a. β is a complement of α iff β is a sister of α.

b. β is a specifier of α iff β is not a complement of α and β is a sister of α' s.t. label(α') = label(K) = α.

(β is a term of $K = \{\gamma, \delta\}$ if $\beta = \gamma$ or $\beta = \delta$, or else β is a term of γ or δ.)

1.2 Agree

Agree is another important syntactic operation.

Consider agreement between a subject and its predicate. An uninterpretable feature F (ϕ-features) on a syntactic object Y (the predicate) is determined by another syntactic object Z (the subject) which bears a matching feature F (the subject's ϕ-features).

The operation of Agree will play an important role in our syntactic calculus and will extend beyond phenomena traditionally thought of as involving agreement.

(3) Agree is the operation by which a head X^0 (the Probe) with a set of unvalued uninterpretable features identifies the closest Y^0/YP in its c-command domain with the relevant set of matching (i.e. nondistinct) interpretable features (the Goal), and uses the features of Y^0/YP to value its uninterpretable features and vice versa.

• Even though the above definition is stated in terms of unvalued features, Agree may involve pure feature checking if the features involved are privative.

The following options are in principle available:

(4) . . . indicates c-command.

a. Simple Feature Checking 1:
X[uG] . . . Y[G] ⟶ X[~~uG~~] . . . Y[G]

b. Simple Feature Checking 2:
X[uG] . . . Y[uG] ⟶ X[~~uG~~] . . . Y[~~uG~~]

c. Feature Valuing 1:
X[uF:] . . . Y[F:val] ⟶ X[~~uF~~:val] . . . Y[F:val]

d. Feature Valuing 2:
X[uF:] . . . Y[uF:] ⟶ ???

The following cases have also been used in the literature, but they do not fall under the definition in (3).

(5) a. Simple Feature Checking 3:
X[G] . . . Y[uG] ⟶ X[G] . . . Y[~~uG~~]

b. Feature Valuing 3:
X[F:val] . . . Y[uF:] ⟶ X[F:val] . . . Y[~~uF~~:val]

One possibility that has been explored is that the options in (5) might go hand in hand with the options in (4). The assignment of nominative to the subject by T^0 and agreement between T^0 and the subject could be seen as a case in point.

A locality constraint on Agree:

(6) *X[uF:] . . . Y[F:val1] . . . Z[F:val2] ⟶ X[~~uF~~:val2] . . . Y[F:val1] . . . Z[F:val2]

References

Chomsky, N. (1998) Minimalist Inquiries: The Framework, MIT Occasional Papers in Linguistics 15, MITWPL, Cambridge, MA.