

Clausal Architecture and Verb Movement

1 Clausal Architecture

1.1 The Hierarchy of Projection

- (1) a. John must leave now.
- b. John must be leaving for the airport right now.
- c. John must have left for the airport by now.
- d. *John must is/been/being/has/had/having/ate/eaten/eating.

We have identified the location of modals with the location of finite Tense. This yields the following hierarchies:

- (2) a. Tense > V_{bare}
- b. Tense > be_{Prog}
- c. Tense > $have_{Perfect}$

We can conclude that the only restriction T^0 imposes on its complement is that it requires its complement to be bare. This is also true for the infinitival marker *to*.

- (3) a. To leave now would not be fun.
- b. To be leaving for the airport right now, John must have started early.
- c. To have left for the airport by now, John must have started early.
- d. *To is/been/being/has/had/having/ate/eaten/eating.....

This pattern can be summarized as follows:

T^0 must take a bare VP complement, where VP covers verbal projections headed by main verbs as well as auxiliaries.

There is now a question of which direction the selection goes in.

- (4) Two Options:
 - a. Option 1: T^0 selects a verbal head that has the property of being inflectionally bare.
 - i. At point of Merge: $T^0[uBare] \dots V^0[Bare]$
 - ii. After Agree: $T^0[Bare] \dots V^0[Bare]$
 - b. Option 2: T^0 selects a verbal head that is inflectionally unspecified and specifies its inflection to be bare. This would be a property of T^0 .
 - i. At point of Merge: $T^0[Bare] \dots V^0[uInfl:—]$
 - ii. After Agree: $T^0[Bare] \dots V^0[uInfl:Bare]$
- (the points above generalizes to the progressive auxiliary *be* and the perfect auxiliary *have*.)

Both options are attested in the analyses of natural language phenomena - (4a) in agreement and (4b) in case-assignment. In what follows, we will adopt the option in (4a).

- A fully compositional option is also conceivable.

1.2 Selection by Perf and Prog

Just like T^0 imposes selectional constraints on their complement, so do Perf and Prog.

- (5) a. Gina has eaten/*eating/*ate/*eat the apple.
b. Gina is eating/*eaten/*ate/*eat the apple.

The above selectional constraint can be represented as follows (along the lines in (4a)):

- (6) a. Selection by Perf:
At point of Merge: have[\dots ,uPerf] ... eat[Perf]
After Agree: have[\dots , \bar{u} Perf] ... eat[Perf]
eat[Perf] is realized as 'eaten'.
b. Selection by Prog:
At point of Merge: be[\dots ,uProg] ... eat[Prog]
After Agree: be[\dots , \bar{u} Prog] ... eat[Prog]
eat[Prog] is realized as 'eating'.

Some additional constraints:

- (7) a. Perf > Prog:
Maya has been eating pizza all day.
b. *Prog > Perf:
*Maya is having been eating pizza all day.

We could, of course, encode the ungrammaticality of (7b) using selection. But the exact source of the ungrammaticality of (7b) remains unclear - it could be semantic in nature. Empirically though we end up with the following hierarchy:

- (8) $T^0 > (\text{Perf}) > (\text{Prog}) > V$

A complete derivation:

- (9) Angela must have been eating pizza all day.
a. [eat[Prog] all day]
b. be[Perf,uProg] [eat[Prog] all day]
c. Agree: be[Perf, \bar{u} Prog] [eat[Prog] all day]
d. have[Bare,uPerf] [be[Perf, \bar{u} Prog] [eat[Prog] all day]]
e. Agree: have[Bare, \bar{u} Perf] [be[Perf, \bar{u} Prog] [eat[Prog] all day]]
f. must[Tns,uBare] [have[Bare, \bar{u} Perf] [be[Perf, \bar{u} Prog] [eat[Prog] all day]]]
g. Agree: must[Tns, \bar{u} Bare] [have[Bare,uPerf] [be[Perf, \bar{u} Prog] [eat[Prog] all day]]]

Each of the heads has an uninterpretable feature and an interpretable feature - the interpretable feature specifies a property of the head and the uninterpretable feature a selectional constraint.

2 The Location of Negation

Where can negation appear?

- (10) a. John might not leave.
b. John did not leave.
c. John has not left.
d. John is not leaving.
- (11) a. Lisa might not have been talking to Bill.
b. Lisa might have not been talking to Bill.
c. Lisa might have been not talking to Bill.

Out of (11a-c), only (11a) is felt to have a status different from (11b-c), and is often referred to as sentential negation as opposed to (11b-c) which are said to involve constituent negation.

Constituent negation can appear on a wide range of syntactic categories.

- (12) a. PP: Minjoo was sitting not on the chair, but on the bar stool.
b. NP: Angela was reading not a comic, but a newspaper.
c. AP: One can be not happy and not unhappy at the same time.

The cut between sentential and constituent negation is ultimately a semantic one. But we can give the following syntactic characterization of the distinction:

- (13) a. Sentential Negation: T^0 [Neg [...
b. Constituent Negation: every other instance of negation.

A minimal pair:

- (14) a. You can't always do that. (sentential)
b. You can always not do that. (constituent)
c. You can't always not do that. (sentential and constituent)

• We will treat *not* as having its own projection NegP.

Two reasons for this:

- (15) a. *n't*, a variant of *not*, can appear as a suffix on the verb:
i. Makoto hasn't left.
ii. Hasn't Makoto left?
b. a contrast between *not* and the negative adverb *never*:
i. Makoto did not leave./*Makoto not left.
ii. Makoto never left./*Makoto left never.

3 Basic Verb Movement

The Hierarchy of Projection:

- (16) $T^0 > (\text{Neg}_{\text{sentential}}) > (\text{Perf}) > (\text{Prog}) > V$

According to the hierarchy of projection the perfect auxiliary *have* and the progressive auxiliary *be* are below negation. This seems right for some cases but not for others.

- (17) a. Aniko might not have been eating pizza.
b. Aniko has not been eating pizza.
c. Aniko is not eating pizza.
d. Aniko did not eat pizza./*Aniko ate not pizza.

Similar facts hold with the negative adverb *never*.

- (18) a. Aniko might never have been eating pizza, but for...
b. Aniko has never been eating pizza.
c. Aniko is never eating pizza.
d. Aniko never ate pizza./*Aniko ate never pizza./*Aniko did never eat pizza.

The facts about *do*-support are actually more general than the above discussion might indicate. *do*-support is triggered by polarity items other than *not* also, such as *so* and *too*.

- (19) Negation and other polarity items
a. Danny does not like Sasha.
(*Danny not likes Sasha.)
b. Danny does so like Sasha.
(*Danny so likes Sasha.)
c. Danny does too like Sasha.
(*Danny too likes Sasha.)

This can be represented by modifying the hierarchy of projection as follows.

- (20) The Hierarchy of Projection (revised):
 $T^0 > (\text{Pol}) > (\text{Perf}) > (\text{Prog}) > V$
(Pol^0 projects PolP , sometimes also referred to as $\Sigma/\Sigma P$)

The generalizations that we can infer from the above set of facts (assuming the hierarchy of projection) are:

- (21) a. If we can insert lexical material under T^0 (e.g. modals and *to*), everything else stays put.
b. If nothing is directly inserted under T^0 and T^0 has $\text{PerfP}/\text{ProgP}$ as its sister, then *have/be* must move to T^0 and realize the features of T^0 .
c. If T^0 has VP as its sister, then the features of T^0 are realized on V^0 .

- d. If T^0 has PolP as its sister, we have two subcases:
 - i. PolP immediately dominates PerfP/ProgP: *have/be* moves to T^0 and realizes the features of T^0 .
 - ii. NegP immediately dominates VP: *do* is inserted under T^0 and realizes the features of T^0 .

do-support has a Last Resort nature - it only applies when all other options have failed. If we insert a *do* in environments where *do*-support is not forced, we get ungrammaticality.

- (22) a. *John doesn't be eating pizza. (vs. John isn't eating pizza.)
- b. *John does be eating pizza. (vs. John is eating pizza.)
- c. *John doesn't have eaten pizza. (vs. John hasn't eaten pizza.)
- d. *John does have eaten pizza. (vs. John has eaten pizza.)

Give that *John eats pizza* is acceptable, why is the following still acceptable? and why does the *do* have an emphatic reading?

- (23) John does eat pizza. (only emphatic reading is available)

One way of thinking about these facts is as follows:

- (24) a. The features of T^0 need to be expressed on an overt host.
- b. If a modal is merged into T^0 , the features of T^0 have a host.
- c. If the highest verb is auxiliary *have/be*, the verb moves into T^0 and provides a host to the features of T^0 . The presence of Pol⁰ does not block this movement.
- d. If the highest verb is a main verb, the main verb cannot move to T^0 . Now there are two options:
 - i. If Pol⁰ does not intervene between T^0 and V^0 , the features of T^0 are realized on V^0 .
 - ii. If Pol⁰ intervenes between T^0 and V^0 , a *do* is inserted under T^0 and the features of T^0 are realized on *do*.

(roughly the proposal in Bobaljik (1995))

An implementation of the above idea given our assumptions about Agree:

Basic intuition: the realization of the features of T^0 is distinct from the categorial selection of T^0 for a bare VP complement.

Assumption 1: The features of T^0 can be realized only on a verbal head that is the sister of T^0 or the head of the sister of T^0 .

Assumption 2: Modals are generated under V^0 , but must combine with finite T^0 to be pronounced.

Assumption 3: *not/so/too* occupy the [Spec,PolP], *-n't* occupies the head of PolP. *never* does not involve projection of a PolP.

Assumption 4: Certain kinds of features cannot be checked by Agree alone - they require movement. Such features are called strong features, sometimes indicated by *. Thus F^* would be the strong version of F .

- (25)
- a. The [unInfl:Tense] feature is strong for *have, be* and modals and weak for main verbs.
 - b. The presence of a NegP does not block T^0 from causing verbs with strong uInfl:Tense features (modals, *have, be*) from moving up to T^0 . Main verbs have weak features and stay put.
 - c. Now the features of T^0 are realized on its verbal sister or the verbal head of its sister. If a verb has moved to T^0 , it counts as a sister of T^0 and the features of T^0 are realized on this head. If nothing has moved to T^0 but T^0 has a verbal complement, then the features of T^0 are realized on this verbal head.
 - d. In the case where the complement of T^0 is a PolP and no verb has moved into T^0 , neither of the above options are available. In this case, a *do* is inserted under T^0 and the features of T^0 are realized on *do*.

A unsolved mystery:

We can say the following:

- (26)
- a. You can't always do that. (sentential)
 - b. You can always not do that. (constituent)
 - c. You can't always not do that. (sentential and constituent)

We can also say:

- (27) You didn't always not do that.

But what is the positive version of (27)? We can say (28), but that seems to be emphatic only.

- (28) You did always not do that.

• it seems constituent negation blocks realization of features of T^0 on the V^0 , but does not trigger *do*-support leading to ineffability. See Embick and Noyer (2001) for details.

References

- Bobaljik, J. D. (1995) Morphosyntax: The Syntax of Verbal Inflection, Doctoral dissertation, Massachusetts Institute of Technology, Cambridge, Massachusetts. Distributed by MIT Working Papers in Linguistics.
- Embick, D., and R. Noyer (2001) "Movement Operations after Syntax," Linguistic Inquiry 32:4, 555–598.