

Linguistic Background on English Nonfinite Verbs

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1 Subjects

Some verbs, such as weather verbs and ones like *seem* that take an \bar{S} complement, require dummy *it* subjects:

- (1) a. It/*Fido/*The weather/*Chicago rained/snowed/hailed/sleeted.
b. It/*Fido/*The weather/*Chicago seemed/appeared/transpired/
that Frege really was Italian after all.

And there are copulas that take a dummy *there* subject, an QP complement, and optionally a second complement (which must be a nonnominal predicative), which are used to assert or deny existence:

- (2) a. There is an even prime/ justice/ beer.
b. There is no even prime/justice/beer.
c. There are many/numerous/several/few/some advantages.
d. There was a kitten (under the chair/demanding attention/ready
to pounce/stuck behind the refrigerator).

We can handle facts like these straightforwardly with lexical entries such as the following:¹ We write PrdnN for the tecto of **nonnominal predicatives**, which subsumes present and passive participials, predicative APs, and predicative PPs.

¹We ignore for now the problems of (1) exactly which QPs can occur in postcopular position when the subject is dummy *there*, and (2) whether the postcopular QP has to agree in number with the copula.

$\vdash \lambda st.s \cdot \text{appeared} \cdot t : \text{It} \multimap \bar{S} \multimap S$

$\vdash \lambda st.s \cdot \text{is} \cdot t : \text{There} \multimap \text{QP} \multimap S$

$\vdash \lambda stu.s \cdot \text{IS} \cdot t \cdot u : \text{There} \multimap \text{QP} \multimap (\text{PRO} \multimap \text{PrdnN}) \multimap S$

But now consider the following:

- (3)
- a. Fido may/might/could/should/will bark/sleep/run/bite Felix.
 - b. It may/might/could/should/will rain/snow/hail/sleet.
 - c. It may/might/could/should/will seem/appear/transpire/that Frege really was Italian after all.
 - d. There may/might/could/should/will be no even prime/justice/beer.
 - e. There may/might/could/should/will be a kitten under the chair/demanding attention/ready to pounce/stuck behind the refrigerator.

The facts in (3) suggest that modals ‘don’t care’ what kind of subject they get, as long as it is the kind of subject its base-form complement would have taken (had it only been finite and therefore able to have a subject). To put it another way, it seems that base-form verbs in some sense *do* ‘care’ about their subjects, even though they cannot exactly ‘have’ them.

The following examples with finite auxiliary *have* show that, similarly, past-participles ‘care’ about their subjects:

- (4)
- a. Fido has/barked/slept/run/bitten Felix.
 - b. It has rained/snowed/hailed/sleeted.
 - c. It has (sometimes) seemed/appeared/transpired that Frege really was Italian after all.
 - d. There has been no even prime/justice/beer (until now).
 - e. There has been a kitten under the chair/demanding attention/ready to pounce/stuck behind the refrigerator (for several minutes).

And the following finite-copula examples make the same point with respect to present participles:²

²Except that the existential *be* doesn’t seem to occur in present-participial form after the (ordinary) copula. It does occur however, in absolutes:

- (1) There being a vicious hyena in the yard, Fido decided not to venture out.

- (5) a. Fido is barking/sleeping/running/biting Felix.
- b. It is raining/snowing/hailing/sleeting.
- c. It is seeming/appearing/transpiring/ that Frege really was Italian after all.

The preceding examples all have finite auxiliaries. But there are also nonauxiliary verbs that seem to “take orders” from their infinitive VP complements about what kind of subject to take. Such verbs, which—together with auxiliaries—are often called **raising-to-subject (RTS)** verbs³ include *tend*, *seem*, and *appear*.⁴

- (6) a. Fido continues/tends/seems/appears to bark/sleep/run/bite Felix.
- b. It continues/tends/seems/appears to rain/snow/hail/sleet.
- c. There continue/tend/seem/appear to be lots of accidents at this intersection.

The following facts involve what appear to be nonfinite counterparts of sentences occurring as complements:⁵

- (7) a. Kim let/had/made/saw/heard Fido bark.
 - b. God let/had/made/saw/heard it rain.
 - c. The secret police let/had/made/saw/heard there be a demonstration in the plaza.
- (8) a. Kim allowed/permitted/required/expected Fido to bark.
 - b. God allowed/permitted/required/expected it to rain.
 - c. The secret police allowed/permitted/required/expected there to be a demonstration in the plaza.

³Because in transformational frameworks, they are analyzed in terms of movement from the subject position of the complement to the subject position of the “next clause up”.

⁴But as noted above, *seem* and *appear* have other lexical entries that call for a dummy *it* subject and an \bar{S} complement.

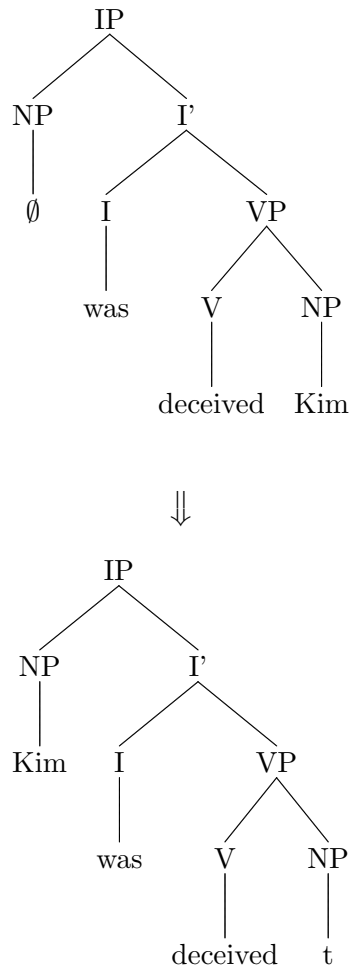
⁵But as we will discuss later, depending on the framework and on specific analytic assumptions, some of these might alternatively be analyzed as sequences of two complements, the first an NP or dummy and the second a nonfinite VP. Verbs analyzed in this way are often called **raising-to-object (RTO)** verbs because, according to certain transformational analyses, they involve movement from the subject position of the complement to the object position of the “next clause up”.

- (9) a. I want/would like/prefer (for) Fido to be sleeping.
 b. I want/would like/prefer (for) it to be raining.
 c. I want/would like/prefer (for) there to be less noise.

No matter how such examples are analyzed, they seem to provide further evidence that nonfinite verbs “care” about their subjects.

2 Passive Participles

In transformational frameworks, passive has usually been treated in terms of movement to an argument position, with the post-movement gap occupied by a null constituent (‘NP-trace’):



But nontransformational theories simply treat passives as different lexical entries than their active counterparts, with the systematic relationship between them handled in the lexicon rather than in the syntax. For example, HPSG the usual way of implementing this idea is to say that many verbs have a passive form ([VFORM **pas**]) morphologically indistinguishable from the past participle but with systematically different valence features and assignment of grammatical functions to semantic roles.⁶

In LG, on a first pass, we can describe passive as the relationship between (1) **active** past participles that select a PRO subject and (some subtype of) ACC object (and possibly other complements as well) and (2) **passive** participles (morphologically indistinguishable from the past participle) that select the same arguments as the active, except that (a) the ACC object is replaced by (some subtype of) NP subject (LG counterpart of the transformational ‘NP-trace’), and (b) the subject PRO is either eliminated or replaced by a By-complement.

In the semantics, the subject of the passive plays the same role (if any) as the object of the active ; and the By-phrase of the passive, if present, plays the same role as the subject of the active. If the By-phrase is absent, the corresponding semantic argument position is existentially quantified over.

Caveats:

1. Not all verbs that take an ACC complement have passive forms:

*A ton is weighed by this boulder.

*A dog is been by Fido.

2. Some passive participles have no active counterpart:

Fido is rumored to be part hyena.

*They rumor Fido to be part hyena.

3. The active counterparts of some passives do not select an ACC complement, but instead have a PP complement or modifier whose prepositional object corresponds to the subject of the passive:

This problem wasn’t known about then.

This bridge has been walked under by generations of lovers.

⁶Meanings of active and passive lexical entries are notated with the same semantic constant but with a different association of syntactic arguments with semantic arguments.

Because of facts like these, it is not possible to treat passivization as an inaudible word (or equivalently, a nonlogical unary inference rule) that maps expressions with tecto ACC . . . PRO \rightarrow Psp to expressions with tecto . . . (\rightarrow By \rightarrow) . . . NP \rightarrow Pas. However, following HPSG, one might attempt instead to treat passive as a **lexical rule**, i.e. a function from lexical entries to lexical entries that is invoked when the grammar is being defined.

In frameworks with lexical rules, essentially one starts out with basic lexical entries, and then the full lexicon is recursively generated from these using the lexical rules as the recursion clauses. In LG, lexical rules would not be inference rules of the grammarlogic; instead they would be used to recursively define the set of lexical entries.⁷

For the time being, it will suffice to simply assume that the passive forms exist, without worrying about “where they came from.” Thus, side by side with active lexical entries with tectos such as:

Acc \rightarrow PRO \rightarrow Psp (*bitten*)
 Acc \rightarrow Acc \rightarrow PRO \rightarrow Psp (*given*)
 Acc \rightarrow \bar{S} \rightarrow PRO \rightarrow Psp (*told*)
 Acc \rightarrow Acc \rightarrow \bar{S} \rightarrow PRO \rightarrow Psp (*bet*)

we have *by*-passive lexical entries with tectos such as:

By \rightarrow PRO \rightarrow Pas (*bitten*)
 Acc \rightarrow By \rightarrow PRO \rightarrow Pas (*given*)
 \bar{S} \rightarrow By \rightarrow PRO \rightarrow Pas (*told*)
 Acc \rightarrow \bar{S} \rightarrow By \rightarrow PRO \rightarrow Pas (*bet*)

and *by*-less passive lexical entries with tectos such as:

PRO \rightarrow Pas (*bitten*)
 Acc \rightarrow PRO \rightarrow Pas (*given*)
 \bar{S} \rightarrow PRO \rightarrow Pas (*told*)
 Acc \rightarrow \bar{S} \rightarrow PRO \rightarrow Pas (*bet*)

⁷Formalizing lexical rules presents a number of difficult technical problems, such as specifying the set of words to which they apply, and specifying the properties of the output in terms of properties of the input. Unfortunately, there isn't time to get into these issues in this course.

Note that in these passive entries, the passive subject ('NP-trace') is instantiated as PRO, because in the corresponding past participle, the ACC object is instantiated as Acc (disallowing dummies).

It is important to be aware that there are many environments for English passive participles besides passive sentences. To put it another way, passive participles don't have to be complements of the copula. This is part of the more general fact that predicatives—the things that can be complements of the copula—have a wide range of possible environments.