1 Dummy Pronouns and Nonfinite VPs

So far we have dodged the issue of whether nonfinite verbs are “looking for” subjects, but there are facts that force us to confront this issue. (And other, similar facts, will force us to raise the same issue in connection with predicatives (expressions that can occur as complements to the copula).)

Some of the relevant facts have to do with the distribution of the dummy “pronouns” it\_dum : It and there\_dum : There. Some verbs, such as weather verbs and verbs like seem that take an S complement, require dummy it subjects:

(1) a. It rained/snowed/hailed/sleeted.
   b. It seemed/appeared/transpired/turned out that Frege really was Italian after all.

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

(2) a. There is a God/ a Santa Claus/ justice/ beer.
   b. There is no God/Santa Claus/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:\footnote{We ignore for now the problems of (1) exactly which NPs can occur in postcopular position when the subject is dummy there, and whether the postcopular NP has to agree in number with the copula. For now we write PrdP\textsubscript{nonN} for nonnominal predicatives (a union type that subsumes present and passive participials, predicative APs, and predicate PPs.) We'll analyze predicatives in more detail soon.}

\begin{center}
\textbackslash \texttt{appeared : } \tilde{S} \rightarrow_{\text{COMP}} \text{ (It } \rightarrow_{\text{SUBJ}} S)
\end{center}
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/turn out that Frege really was Italian after all.
    d. There may/might/could/should/will be no God/Santa Claus/justice/beer.
    e. There may/might/could/should/will be a kitten under the chair/demanding attention/ready to pounce/stuck behind the refrigerator.

Before, we analyzed modals (like other verbs we had considered) as taking NP subjects, but 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 been finite). To put it another way, it seems that base-form VPs in some sense do care about their subjects.

The following examples with finite auxiliary have show that, similarly, past-participle VPs 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/turned out that Frege really was Italian after all.
    d. There has been no God/Santa Claus/justice/beer (until now).
    e. There has been a kitten under the chair/demanding attention/ready to pounce/stuck behind the refrigerator.

And the following finite-copula examples make the same point with respect to present-participial VPs:

(5) a. Fido is barking/sleeping/running/biting Felix.
    b. It is raining/snowing/hailing/sleeting

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

(i) There being a vicious hyena in the yard, Fido decided not to venture out.
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) verbs include tend, seem, and appear:

(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:

(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.

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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 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”.

3
(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.

Finally, in certain kinds of absolutive constructions, we find what appear
to be present-participle counterparts of sentences functioning as sentential
modifiers:\footnote{There are analogous facts for the other classes of predicatives, as we’ll see later.}

(10)  a. Fido sleeping in his cage, Felix took advantage of the opportunity
to get into the doggie treats.
    b. It appearing that Fido was sound asleep, Felix took advantage of
the opportunity to get into the doggie treats.
    c. There being no dog in sight, Felix took advantage of the opportunity
to get into the doggie treats.

On the basis of such evidence, we conclude that so-called nonfinite VPs
actually take subjects to yield nonfinite counterparts of S. Notationally,
the easiest way to handle this is to rename what we have been calling S
to \( S_{\text{fin}} \) and write \( S_{\text{bse}} \), \( S_{\text{prp}} \), and \( S_{\text{psp}} \), respectively, for the result category
in lexical entries for base-form, present-participle, and past-participle verb
forms.\footnote{But the only verb with result category \( S_{\text{inf}} \) is the infinitive auxiliary \textit{to}.}

Thus, for example, in place of the category we have been calling
\( S_{\text{bse}} \), we now have three different categories:\footnote{For the moment we leave
dcheduling the tricky issue of just which subtype(s) of NP
should be permitted to be subjects of nonfinite verbs.}

\[
\begin{align*}
\text{NP} & \rightarrow_{\text{SUBJ}} S_{\text{bse}} \text{ (e.g. be sleeping)} \\
\text{It} & \rightarrow_{\text{SUBJ}} S_{\text{bse}} \text{ (e.g. be raining)} \\
\text{There} & \rightarrow_{\text{SUBJ}} S_{\text{bse}} \text{ (e.g. be less noise)}
\end{align*}
\]

And correspondingly, we replace our lexical entries for auxiliaries (and other
RTS verbs) that called for an NP subject and a “VP” complement with lexical
entry schemata ensuring that the auxiliary takes orders from its complement
about what kind of subject to take. For example, base-form auxiliary
\textit{have} now has the lexical entry schema

\[
\vdash \text{have}_A : (A \rightarrow_{\text{SUBJ}} S_{\text{psp}}) \rightarrow_{\text{COMP}} (A \rightarrow_{\text{SUBJ}} S_{\text{bse}})
\]

where \( A \) ranges over (at least) \{NP, It, There\}.
2. Passives

Informally and roughly, we can describe passivization as the relationship between active verb forms that select an NP object (and possibly other complements as well) and passive verb forms (morphologically indistinguishable from the past participle) that select the same complements as the active, except that (a) the object NP is absent from the list of selected complements, and (b) optionally, an additional By-phrase (in mainstream terminology, a “PP headed by by” is optionally present at the end of the list. In the semantics, the subject of the passive “plays the same role 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.9

In transformational grammar frameworks, passive has usually been treated in terms of movement:

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IP
   NP
     I'  
       I
         |  VP
         |   |  NP
         |   was
         |   deceived
         |     NP
         |       Kim
         ↓

IP
   NP
     I'  
       I
         |  VP
         |   |  NP
         |   was
         |   deceived
         |     t
```

But nontransformational theories simply treat passives as different verb forms than their active counterparts, with the systematic relationship between active and passive being dealt with in the lexicon rather than in the

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9We will look more closely at the semantics of passive later.
syntax. In G/HPSG the usual way of implementing this idea is just to say that many verbs have a passive form (\([\text{VFORM pas}\]) morphologically indistinguishable from the past participle but with systematically different valence features and assignment of grammatical functions to semantic roles.\(^{10}\)

Caveats:

Not all verbs that take an NP complement have passives:

- *A ton is weighed by this boulder.
- *A dog is been by Fido.

Some passives have no active counterpart:

- Fido is rumored to be part hyena.
- *They rumor Fido to be part hyena.

The active counterparts of some passives do not select an NP complement:

- This problem wasn’t known about then.
- This bridge has been walked under by generations of lovers.

Because of facts like these, it is not possible to treat passivization as a function that maps expressions of type (NP \(\ldots\) \(\rightarrow_{\text{COMP}}\) (NP \(\rightarrow_{\text{SUBJ}}\) S)) to expressions of type (\(\ldots\) \(\circ\) By) \(\rightarrow_{\text{COMP}}\) (NP \(\rightarrow_{\text{SUBJ}}\) S). However, following HPSG, one might attempt instead to treat passive as a lexical rule, i.e. a function from lexical entries to lexical entries. In frameworks with lexical rules, essentially one starts out with basic lexical entries, and then the full lexicon is recursively generated from these as an algebra, using the lexical rules as the algebra operations.\(^{11}\) Formalizing lexical rules present 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.

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 such as

\(^{10}\)Active and passive verb forms are translated by the same semantic constant (function symbol), but with a different association of syntactic arguments with semantic arguments.

\(^{11}\)In our framework, lexical rules would not be term constructors of the syntactic logic; instead they would be used to recursively define the set of basic nonlogical constants.
we have *by*-less passive lexical entries like the following:

\[ \begin{align*}
\vdash \textit{bitten}_{\text{pas1}} & : \text{NP} \rightarrow \textit{S}_{\text{pas}} \\
\vdash \textit{given}_{\text{pas1}} & : \text{Acc} \rightarrow \textit{S}_{\text{pas}} \\
\vdash \textit{told}_{\text{pas1}} & : \textit{S} \rightarrow \textit{S}_{\text{pas}} \\
\vdash \textit{bet}_{\text{pas1}} & : (\text{Acc} \circ \textit{S}) \rightarrow \textit{S}_{\text{pas}}
\end{align*} \]

and *by*-passive lexical entries like the following:

\[ \begin{align*}
\vdash \textit{bitten}_{\text{pas2}} & : \text{By} \rightarrow \textit{S}_{\text{pas}} \\
\vdash \textit{given}_{\text{pas2}} & : (\text{Acc} \circ \textit{By}) \rightarrow \textit{S}_{\text{pas}} \\
\vdash \textit{told}_{\text{pas2}} & : (\textit{S} \circ \textit{By}) \rightarrow \textit{S}_{\text{pas}} \\
\vdash \textit{bet}_{\text{pas2}} & : (\text{Acc} \circ \textit{S} \circ \textit{By}) \rightarrow \textit{S}_{\text{pas}}
\end{align*} \]

It is important to be aware that there are many environments for English passives 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 (to which we will return very soon) that the things that can be complements of the copula (usually called predicative expressions) have a wide range of possible environments.