SUPPORT FOR FEATURE INHERITANCE IN ENGLISH

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Keywords: feature inheritance, gerunds, finiteness, TP, complementizers

1. Introduction

As is well known, the finiteness of an (embedded) TP in English is closely related to the CP projection over it.

(1) a. Mac believes \([_{\text{CP}} \text{that} \text{ [}_{\text{TP}} \text{Dee is a liar\]}]\).
b. Mac believes \([_{\text{TP}} \text{Dee to be a liar\]}\).

When a CP is present, the TP is realized as finite, as in (1a). The absence of a CP makes it non-finite, as in (1b).\(^1\) This observation, coupled with another well-known fact that subject-agreement morphologies appear on complementizers in some languages (e.g. West Flemish), leads Chomsky (2008: 143) to propose, in essence, that the C projecting over a T, rather than the T itself, carries those features of finiteness for the TP.\(^2\) He claims that the embedded T inherits the features of finiteness from the C and that the inherited (agreement/tense) features of the T in turn agree with the em-

* I am greatly indebted to anonymous reviewers for their insightful comments on an earlier version of the present note that helped me to sharpen the argument. Many thanks to Jeffery Fryckman and Peter Longcope, for acting as patient informants. The idea presented here was inspired by a spontaneous chat with Jiro Nagase, to whom I owe a great deal. I am solely responsible for any shortcomings that remain.

\(^1\) For ease of exposition, we will leave non-finite cases of CP, as in (i), out of consideration in this note.

\(^2\) See Radford (2009: Ch. 9) and Haegeman and Koppen (2012) for counter arguments against the move.
bedded subject DP, making the TP finite. Let us refer to this approach to finiteness as the Feature Inheritance Hypothesis. The aim of this note is to provide additional empirical evidence for this hypothesis. The hypothesis entails that a TP cannot be realized as finite when it is not selected by a C. The ECM (Exceptional Case Marking) construction, as exemplified in (1b), is a case in point. This note offers another such case in which nouns take complement-like TP clauses, which I refer to as quasi-complements. It is shown that the quasi-complements (in English) are necessarily realized in non-finite (gerundive) but not finite forms. This restriction is attributable to the Feature Inheritance Hypothesis, because no CP can be projected between the head noun and its TP complement. The only available option is to realize them as non-finite. Insofar as no other plausible explanation for the restriction is available, the Feature Inheritance Hypothesis is further strengthened by the restriction.

2. Quasi-complements of Nouns

In English, a cluster of nouns takes gerundive sentential complements.

(2) a. the proof of [them being drug dealers]  
b. the belief of [them being drug dealers]
The bracketed phrases in (2) are taken to be complements, rather than adjuncts, of the head nouns, as indicated by their verbal head counterparts in (3).

(3) a. We proved [that they are drug dealers].  
b. We believe [that they are drug dealers].
The bracketed clauses in (3) are obligatory and thus complements to the head verbs. The semantic parallelism between (2) and (3) suggests that the gerundive phrases in (2) also function as complements to the head nouns.

Alongside these, we have a similar but different kind of complex noun phrase in the same format of “N of gerundive clause.”

(4) a. I heard the sound of [the door being unlocked].  
b. I felt the shock of [his car hitting my car].  
c. The room is filled with the smell of [fish baking].  
d. I saw the dust of [the car going down the dirt road].  
e. I will never forget the taste of [sugar melting on my tongue].
In each of these, the noun depicts a sort of by-product of the event denoted

3 Refer to Richards (2007) for a conceptual discussion on the process of inheritance.
by the bracketed gerundive clause. In (4a), for example, we note that the sound was produced as a kind of by-product when the event of the door being unlocked occurred. The person who unlocked the door might not have intended to make any noise, but the noise was still made as a consequence of the action. The relation between the head nouns and gerundive phrases in sentences such as (4) might not precisely be a head-complement one. For example, we cannot provide a suitable verbal paraphrase of relevant parts of the sentences in (4). However, it is apparent at the same time that the head nouns and the bracketed modifier clauses are semantically closely related. Consider the examples in (4b, c). Under the usual state of affairs, we can feel a shock when a car is hitting another car but not when fish is baking. Thus, shock in (4b) is very much a semantic part of the event of his car hitting my car. Conversely, no conspicuous smell will be sensed if a car hits another car, but cooking fish definitely gives off a noticeable smell. Thus, fish baking and smell are closely related in (4c). Let us employ the term quasi-complement to refer to the complement-like elements in the examples in (4).

What is of interest to us here is that quasi-complements cannot occur as CPs.

(5) a. *I heard the sound [CP that the door was unlocked].
   b. *I felt the shock [CP that his car was hitting my car].
   c. *The room is filled with the smell [CP that fish was baking].
   d. *I saw the dust [CP that the car was going down the dirt road].
   e. *I will never forget the taste [CP that sugar was melting on my tongue].

This sharply contrasts with the clear cases of the head-complement relation in (2).

(6) a. We have the proof [CP that they are drug dealers].
   b. They have the belief [CP that they are drug dealers].

The format of “N of gerundive” is also employed in adjunct clauses.

(7) a. I know the time of [them leaving Japan].
   b. Sally knows the reason of [him not doing so].

4 Here are additional examples of quasi-complements.

   (i) a. I felt the pain of [my head hitting the wall].
       b. The debris of [the house being demolished] was piled up.
       c. My shirt was wet with the sweat of [me running miles up the river].
       d. I cannot overcome the trauma of [you being hit by a car].
Adjunct clauses also have their finite CP versions.\(^5\)

\((8)\)
\(\begin{align*}
\text{a. } & \text{I know the time \([CP \text{ that/when they leave Japan}]\).} \\
\text{b. } & \text{Sally knows the reason \([CP \text{ that/why he is not doing so}]\).}
\end{align*}\)

Obviously, only quasi-complements cannot be realized as CPs, which calls for an explanation. The restriction is rather intriguing, given that both the complement and adjunct clauses can be gerundive or CP. This means that quasi-complements have their own independent syntax and the finite restriction is part of that.\(^6\)

3. The Grammatical Category of Quasi-complements

The discussion in section 2 indicates that quasi-complements are somehow more narrowly restricted than usual complements and adjuncts in syntactic realization. How? In this regard, the following contrast in grammaticality is suggestive.

\((9)\)
\(\begin{align*}
\text{a. } & \text{Charlie believes \([CP \text{ that she is a diva}]\).} \\
\text{b. } & \text{Charlie expects \([CP \text{ that she is a traditional girl}]\).}
\end{align*}\)

\((10)\)
\(\begin{align*}
\text{a. } & \text{Charlie believes \([TP \text{ her to be a diva}]\).} \\
\text{b. } & \text{Charlie expects \([TP \text{ her to be a traditional girl}]\).}
\end{align*}\)

\((11)\)
\(\begin{align*}
\text{a. } & \text{I hope \([CP \text{ that she will come}]\).} \\
\text{b. } & \text{We decided \([CP \text{ that they should take over the project}]\).}
\end{align*}\)

\((12)\)
\(\begin{align*}
\text{a. } & \text{*I hope \([TP \text{ her to come}]\).} \\
\text{b. } & \text{*We decided \([TP \text{ them to take over the project}]\).}
\end{align*}\)

The complements of verbs like believe and expect can be realized either as

\(^5\) Sentential CP adjuncts to nouns are of two types. In one type, as exemplified in (8), the antecedents, or the operators co-indexed with the antecedents, to be exact, act as adjuncts in the subordinate adjuncts clauses. In the other type, the operators correspond to arguments in the adjunct clauses.

(i) \(\begin{align*}
\text{a. } & \text{I know a guy \([\text{who plays the tuba}]\).} \\
\text{b. } & \text{I bought the tuba \([\text{which my daughter plays}]\).}
\end{align*}\)

The second type has no gerundive option.

(ii) \(\begin{align*}
\text{a. } & \text{*I know a guy of \([\text{playing the tuba}]\).} \\
\text{b. } & \text{*I bought the tuba of \([\text{my daughter playing}]\).}
\end{align*}\)

Presumably, the reason is that gerundive clauses contain no CP layers within them, as argued for below, failing to accommodate the moved operators. The grammaticality of (7) suggests that operator movement is optional in the first type.

\(^6\) Quasi-complements might appropriately be characterized and defined on the basis of the AGENTIVE quale proposed by Pustejovsky (1995). The AGENTIVE quale, a formal representation of meaning in the lexicon, describes how the thing denoted by a word comes into existence.
CP or TP, as seen in (9) and (10), while CP is the only option for hope and decide, as in (11) and (12). We can capture this by saying that hope and decide select only CP but not TP for their complement realization.

The contrast observed above between quasi-complements on one hand and complements and adjuncts on the other can be accounted for by the same line of reasoning: the head nouns of quasi-complements select only a certain category as their complements. The reason why we do not have the CP versions of quasi-complements in (5) is that CP does not correspond to that selected category.

Before going on to specify the category, let us first make sure that quasi-complements instantiate the so-called Acc-ing type of gerunds. In all the quasi-complement examples in (4) above, the subjects of the gerundives are in the Accusative Case. Judgments seem to be subject to individual variations, but the Possessive counterparts of (4) are considered to be unacceptable by the informants I consulted.

(13) a. *I heard the sound of [the door’s being unlocked].
   b. *I felt the shock of [his car’s hitting my car].
   c. *I saw the dust of [the car’s going down the dirt road].
   d. *The room is filled with the smell of [fish’s baking].
   e. *I will never forget the taste of [sugar’s melting on my tongue].

Citing similar gerundive constructions, Horn (1974: 107) gives the following judgments.

(14) a. We took a picture of [John/*John’s playing the piano].
   b. [John/*John’s killing Mary] was a horrible sight.
   c. That noise you hear is [John/*John’s kissing Mary].

These are not exactly quasi-complement examples. (14a) is an argument gerundive. In (14b), the gerundive phrase is separated from the head noun by a copula. Example (14c) is more like a quasi-complement, though again, the head noun and gerundive are not together. Still, it is obvious, from judgments like these, that the Possessive Case is excluded from the subjects of gerundive clauses of this kind, and gerundive quasi-complements are realized as Acc-ing.

The next step is to identify the category that accommodates Acc-ing gerunds (and thus realizes quasi-complements). One of the most influential and relatively accepted views of Acc-ing gerunds is the one advanced by Abney (1987). He puts forth an analysis of Acc-ing in which an Acc-ing clause, generated as a TP/IP, is converted into a DP when the affix -ing is attached to the TP/IP. Specifically, the [−N] feature of the TP/IP is over-
ridden by the [+_N] feature of *-ing, whereby the category conversion is performed. He further argues that the operation changes only the topmost projection (i.e. TP/IP) into a DP, with the T'/I' and T/I unaffected. Certainly, this mechanism might explain major characteristics of Acc-ing gerunds, but it clearly violates X'-theory.

An alternative view of Acc-ing, which we will employ here, is the one by Munn (1991) and Pires (2006), who do not resort to category conversion. They simply assume that Acc-ing gerunds are TP/IP. A conceptual advantage of this is, of course, that X'-theory can be respected in phrase structure. Their view is empirically supported as well. Observe the examples in (15), where expletives are contained in DPs.

(15)  a. I hate [DP (*it) rain].
    b. [DP (*There) something stinky] is in my pocket.

The ungrammaticality of these examples shows that Spec of DP cannot host expletive subjects (*it and *there). However, as is known, expletive subjects can comfortably appear in Acc-ing gerunds.

(16)  a. I remember [it raining all day that day].
    b. I remember [there being a lot of snow on the ground].

If the topmost TP projection of an Acc-ing clause were in fact converted into a DP, its Spec should exclude expletive subjects, but this is not the case.

Note in passing that expletive subjects can also occur in quasi-complement gerunds, reinforcing our claim that they are cases of Acc-ing and highlighting their sentential nature.

(17)  a. I heard the sound of [it raining pretty hard].
    b. I noticed the smell of [there being something stinky in my bag].

The theoretical motivation behind the category conversion system in Abney (1987) is to guarantee that Acc-ing gerunds share their external distribution with other nominal elements (i.e. DPs). Notice that this can be achieved by stating that attachment of *-ing to the T head in an Acc-ing clause just changes its [−N] feature into [+N], without affecting the categorial status of TP. This allows us to explain why Acc-ing gerunds distribute in the same way as DPs, while capturing their fundamental sentential characteristics as TPs.

The proposed analysis is theoretically feasible. It is likely that any kind of TP should share the defining nature of T (e.g. an ability to host expletives) with any other instance of TP. Let us tentatively capture this core nature of T using the feature [+T]. Then we can say that an Acc-ing
clause, as an instance of TP, has the [+T] feature on the head T. What distinguishes it from other instances of TP is that it is further attached by the gerundive morpheme (-ing), which is taken to have the [+N] feature. The Acc-gerund retains its categorical status as TP, thanks to [+T]. In addition, the incorporated [+N] feature of -ing (which overrides the [−N] feature of the T) allows/forces the Acc-ing clause to be in a position where Case is available, in the same way as DPs. There is no special technology for this implementation.

In contrast, the DP theory of Acc-ing suffers from a number of empirical and theoretical drawbacks. Empirically, it wrongly predicts that an Acc-ing structure should exclude expletive subjects, as already noted. Theoretically, it violates X'-theory and probably the Inclusiveness Condition (not a minor departure from the core architecture of grammar). Furthermore, it is unclear what merit can be gained by thinking that TP is replaced with DP on the top layer of an Acc-ing phrase in violation of X'-theory, once the [+N] feature overrides the [−N] feature on T (so that the phrase obtains a partial status of DP). The leading motivation for the move is presumably just to capture three kinds of gerunds (Acc-ing, Poss-ing, and Ing-of in his terms) uniformly under the same category of DP. It will be reasonable, therefore, to decide that Acc-ing gerunds instantiate TP, and quasi-complements, as Acc-ing gerunds, are also cases of TP.

Recall here our previous observation that quasi-complements, unlike true complements and adjuncts, are realized only as Acc-ing gerunds but not as CPs. We can reformulate the restriction in purely categorial terms now: quasi-complements should necessarily be TPs, since the head nouns choose only the category TP for their quasi-complement realization.

One might argue that an infinitival phrase, as a TP, should also be able to host a quasi-complement, if the realization of quasi-complement is categorically designated as TP. Yet this is not true.

(18) a. *I heard the sound of [TP the door to be unlocked].
   b. *I felt the shock of [TP his car to hit my car].
   c. *The room is filled with the smell of [TP fish to bake].
   d. *I saw the dust of [TP the car to go down the dirt road].
   e. *I will never forget the taste of [TP sugar to melt on my tongue].

Notice, however, that an infinitival TP is generally disallowed as a comple-ment or adjunct of N (cf. Chomsky (1986: 191)).

(19) a. *the proof of [TP them to be drug dealers]
   b. *the belief of [TP them to be drug dealers]
(20)  a. *I know the time of [TP them to leave Japan].
b. *Sally knows the reason of [TP him not to do so].
Neither usual complements in (19) nor adjuncts in (20) can be projected as infinitival TPs in complex noun phrases. While it remains to be seen how this restriction is eventually explained, the issue is arguably not peculiar to quasi-complements. We can reasonably expect that whatever accounts for (19) and (20) also accounts for (18).

4. Discussion

In the previous section, we saw that the category of quasi-complements is specified as TP. Given this, the ungrammaticality of the examples in (5), repeated here as (21), is readily explained.

(21)  a. *I heard the sound [CP that the door was unlocked].
b. *I felt the shock [CP that his car was hitting my car].
c. *The room is filled with the smell [CP that fish was baking].
d. *I saw the dust [CP that the car was going down the dirt road].
e. *I will never forget the taste [CP that sugar was melting on my tongue].
In each case, the quasi-complement is tensed, and a CP projects over it. However, the head noun categorically selects only TP for its quasi-complement, and thus the examples in (18) can never be generated.

What remains to be explained is why we do not have examples like (22), where the complementizers in the ungrammatical examples in (21) are taken away so that the quasi-complements can be instantiated as finite TPs.

(22)  a. *I heard the sound [TP the door was unlocked].
b. *I felt the shock [TP his car was hitting my car].
c. *The room is filled with the smell [TP fish was baking].
d. *I saw the dust [TP the car was going down the dirt road].
e. *I will never forget the taste [TP sugar was melting on my tongue].
The Feature Inheritance Hypothesis can provide a plausible explanation for this. The hypothesis states that the features for the finiteness of a T originally reside in the C over it. When the C is introduced into the phrase structure, the relevant features are transferred from the C to the T. The implication is that a subject-predicate sequence cannot be finite when it is not directly selected by a C. The quasi-complement construction, as well as the ECM construction, is a case in point. Selected as a TP, a quasi-
complement fails to inherit relevant finiteness features from a C.\(^7\) Thus, there is no way to derive such examples as (22), where quasi-complements present themselves as finite TPs. The only option is to realize them in a form that needs no help from C, such as a gerund.\(^8\)

5. Conclusions

This note has pointed out that, unlike usual complements and adjuncts, quasi-complements refuse to be realized as CPs in complex noun phrases. They can appear there only as gerunds. I have demonstrated that grammatical examples of quasi-complements instantiate Acc-ing gerunds, and Acc-ing gerunds are cases of TP. The restriction on quasi-complements is captured by stating that the head nouns select only TP as their syntactic realization. The most interesting finding of the paper is that a tensed TP cannot serve as a quasi-complement. I claimed that this restriction is accounted for by the Feature Inheritance Hypothesis, which posits that the finiteness features of a T originate in the head C projecting over it. A quasi-complement, whose categorial realization is specified as TP, can present itself only as a non-finite TP (an Acc-ing gerund), because no C is available from which it can inherit the finiteness features. We conclude that the proposed solution lends further support to the Feature Inheritance Hypothesis, without which the restriction on quasi-complement realization would remain just a descriptive generalization.

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\(^7\) If the DP theory of Acc-ing but not the TP alternative eventually turns out to be correct, there is nothing that the quasi-complement construction can say about the Feature Inheritance Hypothesis. In that case, the category of a quasi-complement is designated as DP, in which no tensed clause is allowed to appear in the first place.

\(^8\) *Of* intervenes between a noun head and its quasi-complement, and I assume, following Chomsky (1995: 114), that this *of* is the realization of the Genitive Case provided by the head noun. As for the Accusative Case on the subject of an Acc-ing gerund, refer to Reuland (1983) and Pires (2006). They claim that relevant feature operations are carried out within the gerundive clause, although the ultimate source of the Case is outside it.
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[received March 26, 2014, revised and accepted July 19, 2014]

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