A Revised Labeling Approach to Long-Distance Agreement

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Abstract The present study points out a critical issue of the labeling theory (Chomsky 2013) where it undergenerates. It fails to predict the grammaticality of long-distance agreement, a phenomenon that has been attested in many languages such as English, Icelandic and Kaqchikel. A revision of the theory is proposed, which successfully accounts for the data that the original theory failed to explain. Furthermore, the revision parallels a previous proposal by Saito (2016) and suggests that agreement and case are two different ways to resolve the problem of projection.

Key words Labeling, Problems of Projection, φ-agreement, projection licensor, expletive there, locative inversion, long-distance agreement, case, syntax

1. Introduction

Chomsky’s (2013) labeling theory has provided a novel and uniform account of why syntactic movement and agreement exist in languages. According to this theory, movement and agreement exist to resolve Problems of Projection (POP) that arise from merging two heads or two phrases. In particular, when a noun phrase and a TP are merged, they agree with each other, so that the common agreement feature can supply its label to the merged phrase, and solve the POP. We note a critical problem of this theory and present attested data across three languages that it fails to generate. These data on long-distance agreement suggest that agreement does not necessarily have to occur between the pair of phrases that cause the POP. Rather, as long as one of the phrases has agreement morphology, that suffices as a solution to the POP. So we revise the theory and argue that in a POP situation, the constituent marked by agreement morphology is licensed to project that agreement feature as the label of its mother node, and that agreement morphology does not have to result from agreement with its sister. By relaxing the criterion of what form of agreement counts as a solution to POP, we can now successfully account for the data that the original theory failed to explain. Furthermore, our revision is not ad-hoc, but in fact parallels Saito’s (2016) argument that case morphology is also a solution to POP. If this is true, it suggests that agreement and case morphology are reflexes of each other and two different ways to resolve a POP.

2. Original Theory of Labeling

Chomsky’s (2013) general approach lays out a theory of how structures are built in narrow syntax, and particularly, how
each structure gets its label. The theory not only provides the necessary theoretical tools to build the basic structures of syntax, but it also makes predictions about when movement must occur — movement occurs to address Problems of Projection (POP) — and it also identifies the role of agreement in language.

To begin, we will review details of the theory of labeling. According to this theory, Merge applies to two objects α and β, and forms a new object γ = {α, β}. α and β are existing objects available to this operation, while γ is a new construct that must be given a label. The nature of human language is that each phrase is headed, meaning that either α or β provides the label for γ; the question is, which is chosen, α or β, to project itself to give the label for γ? There are three possible configurations that result from Merge.

(1) a. γ = {H, αP}
   b. γ = {αP, βP}  Problem of projection
   c. γ = {H₁, H₂}  Problem of projection

In (1a) Merge has combined a head (H) and an XP; in (1b) two XPs have been combined; and in (1c) two heads have been combined. In order for γ to find its label, it undertakes search within its local domain, which is the binary structure that it directly dominates, and picks one of the pairs to project to furnish the label for γ. This search, called a labeling algorithm, must result in an unambiguous choice. In (1a) the search does in fact result in a unique choice, since the members of the pair, {H, αP}, are distinct, and H is the closest target of the search. In contrast, neither of the remaining two results in a unique search because the two members are XPs ((1b)) or they are both heads ((1c)). Unless they are altered in some fashion, neither of these merged structures would be labeled, thus it will create a POP and fail as a structure in language.

Chomsky identifies two additional operations that can apply to ambiguous merged structures, movement, which is a form of Merge, and agreement. We illustrate both in the derivation of the external argument. There are two POPs that arise in this structure, both of the form in (1b) above, in which Merge has paired two XPs. The first of these is the pair {DP, vP}.

(2)

A way to provide a unique label for γ is to have one of the members move out of the structure, leaving just one member of the pair for γ. This is what we see in (3): having the DP vacate its original position leaves vP as the sole member, allowing it to project and giving γ an appropriate label.

(3)

While movement of the external argument allows labeling of the lower γ, it leads to a second POP at the landing site of
this movement, \{DP, TP\}. To avoid a POP, there is an additional element in this pair that makes labeling of \(\gamma\) possible, namely, agreement. As a result of agreement between DP and T, the two members of the pair, \{DP, TP\}, despite being distinct, nevertheless share the same feature \(\phi\). Searching \{DP, TP\}, then, the labeling algorithm finds the same prominent element \(\phi\) in both terms, and can take that to be the label of \(\gamma\) (Chomsky 2013).

\begin{equation}
\gamma <\phi, \phi>
\end{equation}

This theory successfully accounts for the external argument’s movement to Spec, TP and its \(\phi\)-agreement with T in English. Consider the following simple example:

(5) \[
\{\phi \text{ John}, \text{will}\ \{\phi \text{ t}, \text{buy books}\}\}.
\]

The subject \text{John} moves out of Spec, vP so that the mother node of its base position can be labeled as vP. But when the subject moves to form a sister of TP, we run into a POP again. Here the subject DP agrees in \(\phi\)-feature with T, so that their mother node can be labeled as a \(\phi\)P.

2.1. A Problem

There is a problem with this approach. While it accounts for most cases of \(\phi\)-agreement in English that involve local agreement of the subject and its sister, English has been argued to have long-distance agreement as well. Long-distance agreement is agreement not between sisters, but between two elements that are farther away.

English sentences involving the expletive \text{there} are claimed to involve long-distance agreement. \text{There} is generally assumed to be semantically vacuous and inserted only to fill Spec, TP (Chomsky 2000):

(6) There are many people in the room.

When the expletive phrase \text{there} is merged with TP and generates \{there, TP\}, a POP arises. The usual solution would be to have \text{there} and T agree in \(\phi\)-feature, so that the merged node can bear the label of that \(\phi\). However, \text{there} is deficient in \(\phi\)-features, according to Chomsky 2000. Having failed to agree with its specifier \text{there}, T then probes down and agrees with the associate DP instead. This is supported by the fact that the \(\phi\)-features of T covary with those of the associate DP:

(7) a. There is a person in the room.
   b. There are many people in the room.

The word order indicates that the associate DP follows finite T, so it can’t be T’s specifier. The definiteness restriction that the associate must be indefinite and nonspecific also suggests that it stays low (Milsark 1974). Assuming the low position of the associate DP, this suggests that agreement can occur between T and the associate phrase lower down instead of specifier of T.

The labeling approach fails to predict such long-distance agreement. Under this approach, the only solution to POP by agreement has to be agreement between XP and YP from which the POP arises, i.e. local agreement between sisters. It predicts long-distance agreement to be impossible and undergenerates.

Long-distance agreement is seen not only in \text{there} expletive sentences, but also locative inversion constructions in
English:

(8) a. Into the room have walked three women.
   b. On the desk sits a lamp.

When a locative phrase is in Spec, TP, the $\phi$-features of T covary with those of the associate DP lower down, an indication that T agrees with the associate DP rather than the locative PP. This long-distance agreement presumably results from the deficiency of $\phi$-features of the PP in Spec, TP. Again, the labeling approach fails to predict the grammaticality of locative inversion constructions as well.

Long-distance agreement is not only limited to English, but actually a much broader phenomenon that exists in other languages as well. Icelandic, for instance, is famous for having quirky-case subjects. They are subjects of certain verbs and occur in idiosyncratic lexical nonnominative case (Thráinsson 2007). When a subject bears quirky case, the finite verb, which would otherwise agree with the nominative subject, agrees with the nominative object instead:

(9) Henni leiddust strákarnir.
   her.3SG.DAT bored.3PL the boys.3PL.NOM
   ‘She found the boys boring.’

(Thráinsson 2007)

We can understand this agreement pattern if we think of Icelandic finite T as only targeting nominative nominals for $\phi$-agreement. (9) is clearly a case of long-distance agreement, where T agrees with the object lower down rather than its specifier. And again, the labeling approach falls short here as well.

Long-distance agreement has been seen in the Mayan language Kaqchikel as well. Kaqchikel is a head marking language with no overt case-marking on nominal arguments. Imanishi (2014) argues that the subject agrees with v (ergative agreement) and undergoes movement to Spec, TP. The object enters an agreement relation (absolutive agreement) with T. The fact that T agrees not with its sister, but with the object lower down constitutes another case of long-distance agreement and a problem for the labeling approach:

(10) yïn x-e-in-tzët rje’.
    I Prfv-Abs3p-Erg1s-see they
    ‘I saw them.’

(Mateo Pedro, 2009)

3. Solution

Having seen the limitations of the labeling approach, we are left with two ways out. One is to completely abandon the theory, and the other is to revise it so that it accounts for the data it did not before.

We choose the second option, and posit that $\phi$-agreement morphology licenses an element to project that $\phi$-feature, thus avoiding a POP. We hence call agreement morphology a projection licensor (PL). The two sisters may share the same $\phi$-feature, in which case that $\phi$-feature projects, as we have seen with the common agreement between a head and its specifier. Or only one of the sisters may have a PL, in which case that constituent projects, as we have seen in long-distance agreement.

The crucial difference between our revision and the original theory is that the POP is resolved as long as one of the sisters has $\phi$-agreement morphology; we do not require the merged pair to agree with each other. This accounts for the
long-distance agreement that the original labeling theory cannot: a head may agree with an element that is not its specifier as long as the head bears the agreement morphology, as has been attested in English, Icelandic and Kaqchikel.

The following sentence shows that agreement can be achieved in an even longer distance than we have seen so far in this paper, a further confirmation that our revision is on the right track:

(11) There seem [\text{\text{\textit{InfTP} + to be many people in the room}}].

In this example, matrix finite T agrees with an associate DP separated from it by an infinitival TP. Our revised labeling theory predicts this: as long as no other \(\varphi\)-probe intervenes in between, the \(\varphi\)-probe on finite T can cross multiple infinitival TP boundaries, and find the associate DP embedded in the infinitival TP. Infinitival T is not a \(\varphi\)-probe and so does not intervene in the probe-goal relation. Finite T successfully values its \(\varphi\)-probe, and bears agreement morphology that licenses it to project its label and resolve the POP.

Our theory also successfully predicts raising: the subject of an infinitival TP will keep moving until it lands in the specifier position of a finite T. Take (11) as an example, when the expletive is in Spec, infinitival TP, we run into a POP with \(\{\text{\textit{there}, TP}\}\). The infinitival T cannot be inflected for agreement to be a projection licensor, so the expletive must move out to resolve the POP. It will only stop moving when its sister has a PL, namely an inflected finite T.

Our revision is not an ad-hoc change just to get out of the long-distance agreement problem. The idea of a PL actually mirrors a previous proposal by Saito’s (2016), in which he argued that morphological case marking can block a DP from projecting. As he noted, this predicts that a morphologically-cased DP may scramble and adjoin to TP \(\{\text{DP-case, TP}\}\) without triggering a POP. This idea predicts that in Japanese, the external argument may stay in Spec, vP. We see this from Kumamoto Japanese: KJ has two nominative cases, \(\text{\textit{ga}}\) for vP-external DP and \(\text{\textit{no}}\) for vP-internal DP, glossed as GEN below.

(12) a. Taroo\-ga/*no son syoosetu\-ba koota bai.  
\begin{center}
\begin{tabular}{l}
Taroo\-NOM/GEN the novel\-ACC bought FP \\
\end{tabular}
\end{center}
‘Taro bought the novel.’

b. Son syoosetu\-ba Taroo\-no koota bai.  
\begin{center}
\begin{tabular}{l}
the novel\-ACC Taroo\-GEN bought FP \\
\end{tabular}
\end{center}
(Kato 2007)

In the SOV order in (12a), S has moved to Spec, TP due to the EPP, so only \(\text{\textit{ga}}\) is allowed, but in the OSV order in (12b), O satisfies the EPP and S may have \(\text{\textit{no}}\), showing that S can stay inside vP because it has the morphological case marking.

We follow this proposal and characterize morphological case marking as “projection blocker” (PB) because it blocks XP from projecting, so that its sister can project. If this is the case, then PB and PL stand in parallel. Both are solutions to a POP, and both depend on morphological marking: while agreement licenses the constituent to project its label, case morphology inhibits the constituent from projecting.

4. Conclusion

We have shown the undergeneration problem of the original labeling theory. Our modification to the theory fixes this problem by relaxing the criterion of agreement as a solution to the POP: it suffices as long as one of the merged pair is licensed to project by agreement: the source for that feature valuation does not matter. This approach, combined with Saito’s (2016) proposal about case morphology as a solution the POP, suggests that agreement and case morphology mirror each other as different solutions to the POP.
While our paper is mostly concerned with φ-agreement, the same approach may be extended to other forms of agreement such as wfr-agreement. For instance, a wfr-phrase has been shown to move successive-cyclically through intermediate phase edges before landing in Spec, CP of the interrogative C probe (c.f. van Urk and Richards 2013, for example). This is predicted by the labeling theory, as a POP arises when the wfr-phrase is merged with an intermediate CP (wfr-phrase, CP), and the solution is to move the wfr-phrase out. It stops moving when the wfr-word agrees with its sister, the interrogative CP, and the shared wfr-feature projects.

Given the discussion of long-distance φ-agreement in this paper, a natural question is whether there is long-distance wfr-agreement in any natural language. Recall our definition of long-distance agreement as agreement that occurs not between sisters. We believe so. One example is English subject wfr-questions, which has been shown to not involve any movement of the wfr-subject:

(13) Who left?

With the wfr-subject remaining in Spec, TP, the specifier-less interrogative C agrees with the wfr-subject lower down. Unfortunately, since the CP has no specifier, we also don’t run into a POP in such a situation, so we wouldn’t be able to tease apart the original labeling theory and our revised version in the case of wfr-agreement. Still, future research awaits to extend our modified labeling theory to other aspects of the grammar.

5. References


