

Why improper movement leads to ungrammaticality?: A proposal from functionalism

Shin'ya UCHISHIBA

Independent Researcher

Abstract

This squib discusses *improper movement*, a phenomenon hitherto disputable in generative grammar.

Through the squib, we will find that the reason for the ungrammaticality of sentences involving this sort of movement is functional rather than syntactic. An important cue for this finding comes from phenomena akin to improper movement, which we term *pseudo-improper movement*. It is demonstrated that a functional perspective provides us with a straightforward explanation for the ungrammaticality due to pseudo-improper movement. This in turn suggests that the ungrammaticality due to normal improper movement should also fall under that perspective. This squib aims to offer an opportunity to let the formalism (such as generative grammar) and the functionalism work hand in hand to expand the range of explainable phenomena, but not to criticize the state of the art of the former camp of linguistic approach.

1 Introduction

In this squib, we investigate the phenomenon known as *improper movement* (hereafter abbreviated as IM) in generative grammar (Chomsky 1973, 1981; May 1979). IM refers to movement from an \bar{A} -position to an A-position, considered *improper* in its literal sense. Classical literature has speculated that sentences involving such movement are ungrammatical due to its impropriety. Although extensive research has been conducted on IM (Williams 1974, 2003, 2013; Fukui 1993; Muller and Sternefeld 1993, 1996; Abels 2007, 2009, 2012a,b; Obata and Epstein 2008; Neelemen and van de Koot 2010; Muller 2014a,b; Keine 2019,

2020; Poole 2022; Uchishiba 2022), the question of why it becomes improper for an element to move from an \bar{A} -position to an A-position remains unresolved. On top of this, the *Free-Merge model* of generative syntax (Chomsky 2020 et seq.), currently embraced by many generativists, prompts significant changes to previous approaches to IM. According to this model, the operation *Merge*, the primary device for structure-building, is literally meant to apply freely.¹ Namely, *Merge* is an ateleological operation in this model. Additionally, this model subsumes movement under *Merge*, hence treating it as ateleological as well. In this sense, the *Free-Merge model* is incongruent with any attempt to explain IM under traditional approaches which treated movement as teleological. Therefore, in order to address the aforementioned question within this model, we have to reconsider how to approach IM.

In this squib, we refrain from revisiting numerous studies on IM individually. Instead, we dedicate ourselves to reevaluating major examples which have been allegedly associated with IM. By doing so, we will unearth the finding that cases whose ungrammaticality has been attributed to IM are impaired in grammaticality for a reason orthogonal to it. In the course of our argument to reach this finding, the two sorts of IM-like movement presented in (1) are crucial. We term these two *pseudo-improper movements* (PIM) solely for expository purposes.

(1) PIM:

- i. A-movement from the inside of an \bar{A} -moved constituent.
- ii. A-movement of a constituent from which another constituent has been extracted via \bar{A} -movement.

¹Note that this does not mean that movement does not obey economy constraints like locality. In this paper, we abstract away from such constraints only for avoiding clutter.

The literature consistently purports ungrammaticality in movements of these types (see Keine 2020 and references cited therein). Notably, A-movement in PIM does not traverse any \bar{A} -position (the relevant examples showing this will be examined in section 4). This observation suggests that the ungrammaticality in PIM cases cannot be attributed to the A-movement pathway in the same way as in IM cases. This raises a skepticism: Is the ungrammaticality of IM cases truly linked to the A-movement pathway?

In this squib, we contend that the ungrammaticality resulting from PIM does not stem from a disregard for syntactic constraints. Instead, we argue that the primary cause for this ungrammaticality is identified as the functional deficiency in the derivational outcomes of such movement. Furthermore, we extend this functional perspective to normal IM cases. Namely, our goal is to demonstrate that the reason for the ungrammaticality in both IM and PIM cases is functional rather than strictly syntactic in the narrow sense.

To avoid misunderstanding, it is significant to emphasize that this squib does not intend to criticize the state of the art in generative grammar as a formalist camp. Rather, we aim to demonstrate that challenges within this formalist program of linguistic inquiry can be effectively addressed by incorporating insights from functionalism.^{2, 3} For a similar proposal, see Kuno and Takami 1993; see also Golumbia 2010, who

²As for work pioneering a functional model of linguistic inquiry, see Halliday (1973, 1985). For relatively recent work on this model, see Butler (2003, 2006), Bybee (2006), Newmeyer (2003, 2005), among many others.

³As Golumbia (2010: 31) states, “functionalism in linguistics is not a term that can be easily ascribed to a discrete group of adherents.” In this study, we use this term as “an umbrella term for a general [functional] approach or set of [functional] approaches” (Golumbia 2010: 31). Conversely, we use the term *generative grammar* exclusively for the Chomskyan linguistic program, although we acknowledge that it subsumes *head-driven phrase structure grammar* (Pollard and Sag 1994), *categorial grammar* (Montague 1973;

suggests that the current version of generative grammar has more flexibility in adopting functional insights compared to its previous versions such as *government & binding theory* and *principles & parameters approach*; as for ideological barriers between formalism and functionalism, see Bošković 2022, who, however, reveals that these barriers are often based on mutual misunderstandings of their tenets.

2 IM: A quick overview

Example (2) illustrates an orthodox case of IM:

(2) * $John_i$ seems [_{CP} t_i (that) [_{TP} t_i likes ice cream]].

In (2), the noun phrase *John* moves from the subject position of the embedded clause (CP) through the specifier of that clause and lands in the subject position of the matrix clause (movement like this is also known as *hyperraising*). Conventionally, the specifier of CP is regarded as \bar{A} -position, and the specifier of TP, which corresponds to subject position, is regarded as A-position. As seen, the pathway of A-movement in this example involves an \bar{A} -position. This movement, therefore, is defined as improper. Traditional generativists have blamed the ungrammaticality of (2) on this impropriety.

However, the ungrammaticality of (2) can also be attributed to another syntactic reason. In (2), the noun phrase *John* receives Case assignment in both the subject position of the embedded clause and of the matrix clause. That is, Case duplication occurs, hence resulting in ungrammaticality. However, generative grammarians were reluctant to accept this alternative account. Rather, they amassed counterexamples

Steedman 1987), and other generative approaches.

against it, some of which are presented below:

- (3) a. *Mary's belief [John_i to be likely [CP *t_i* [*t_i* will win]]] (Lasnik and Boeckx 2006: 118)
b. *It is certain [Rohda_i to be likely [CP *t_i* [*t_i* is intelligent]]] (Nevins 2005: 292)
- (4) a. *John_i seems [CP *t_i* that it is certain [*t_i* to like ice cream]]] (Chomsky 1981: 58)
b. *John_i seems [CP *t_i* that it was told *t_i* [that Mary was a genius]]] (Lasnik and Saito 1992: 192)

In (3) and (4), A-movement passes through the specifier of CP as an \bar{A} -position. All these examples are ungrammatical similarly to (2). However, we cannot attribute this ungrammaticality to Case duplication, because the halting sites of movement in (3) and the launching sites of movement in (4) are positions where Case assignment is not applicable.

3 Prolegomenon to a functional approach

With this background, let us begin by reassessing (3). This example indeed illustrates that the movement traverses an \bar{A} -position to reach an A-position where Case assignment is not applicable. Now, consider the following example:

- (5) *There is likely [a train_i to arrive *t_i* in the station].
Cf. There is likely to arrive a train in the station. (Deal 2009: 308-9)

In (5), the noun phrase *a train* moves to the specifier of TP in a noncontrol infinitival clause, parallel to the

movements observed in (3). However, the movement path in (5) does not involve any intervening \bar{A} -position such as CP's specifier. Nevertheless, (5) is ungrammatical. Deal (2009), following Moulton (2007), presumes the specifier of TP in noncontrol infinitival clauses to be a *lethal A-position*, where no noun phrase receives any semantic interpretation. Although Deal is silent about why such position is semantically lethal, the ungrammaticality in (5) falls into place because the landing site of *a train* prevents it from receiving any semantic interpretation. This reasoning can be automatically extended to (3). Namely, the ungrammaticality in (3) stems from the uninterpretability of the moved elements at their landing positions, but not from the impropriety of the movements in question.

Here, let us briefly discuss why the specifier of TP in noncontrol infinitival clauses is semantically lethal. First of all, we introduce De Vos' (2007) work into the discussion. De Vos posits that Nominative Case is decoded into the grammatical role of subject in the semantic component. Following this hypothesis, the specifier of TP in finite clauses is regarded as a syntactic position in which subjecthood manifests, because of the prevalent assumption that this position is assigned Nominative Case.⁴ In contrast, the specifier of TP in noncontrol infinitival clauses lacks the assignment of Nominative Case (or any other Case), meaning that this position fails to acquire subjecthood. Very broadly, no noun phrase can be functionally interpreted in that position. This amounts to the semantic lethality in question. If this line of reasoning is on track, we can take the examples in (3) as functionally deficient in that *John* and *Rohda* cannot receive any grammatical role in their respective landing sites. Accordingly, we can conclude that this

⁴See also Uchishiba (2022), where it is argued that, if DeVos' hypothesis is on track, we can dispense with *extended projection principle* (Chomsky 1981) under the Fee-Merge model of generative syntax. This principle, roughly speaking, requires every sentence have a subject.

functional deficiency renders these examples ungrammatical.

Before moving on to (4), we have to tackle on challenges around PIM. As will become clear due course, an insight behind approaching PIM can be effectively extended to the remaining IM cases, (2) and (4).

4 PIM: a view from a functional perspective

What we term PIM is exemplified below:

- (6) a. It is known [_{CP} [how likely t_i^A to win]_j Oscar_i is $t_j^{\bar{A}}$]
b. *Oscar_i is known [_{CP} [how likely t_i^A to win]_j it was $t_j^{\bar{A}}$]
(Abels 2009: 331, based on Sakai 1994: 300)

- (7) a. It is known [_{CP} which king_i they sold [a picture of $t_i^{\bar{A}}$]
b. *[A picture of $t_i^{\bar{A}}$]_j is known [_{CP} which king_i to have been sold t_j^A]
(Keine 2020: 307)

(6b) exemplifies (1i): the noun phrase *Oscar* A-moves to the subject position of the matrix clause from the inside of the A'-moved constituent in the embedded clause. (1ii) is illustrated in (7b): the wh-phrase *which king* \bar{A} -moves out of the noun phrase within the embedded clause, followed by the remnant noun phrase A-moving to the subject position of the matrix clause. As shown, these two series of movement each result in ungrammaticality. Noteworthy is that the A-movements in those series do not pass through any \bar{A} -position.

Concerning (6b), one might suspect that it is rendered ungrammatical by the extraction out of the moved constituent, namely the freezing effect. However, the fact witnessed below disconfirms this possibility:

- (8) a. ??Who_i do you wonder [_{CP} [which picture of $t_i^{\bar{A}}$]_j Mary bought $t_j^{\bar{A}}$]?
(Lasnik and Saito 1992: 102)

- b. ?Which movie_i do you think [that [the final part of $t_i^{\bar{A}}$]_j is likely [t_j^A to create a big scandal]]?
(Abels 2009: 331)

(8a) and (8b) are both judged more acceptable than (6b), although extraction is implemented out of the moved constituents.

To explain the ungrammaticality of (6b) and (7b), Keine (2020) postulates a syntactic constraint (in his term *horizon*) on the operation serving as the bedrock of movement (*Agree* in the recent framework of generative grammar) (see also Poole 2022). However, introducing such a constraint into the current model of generative syntax is already moot (cf. also Boskovic 2022). Repeatedly, this model proclaims that Merge and its variant movement (i.e. *Internal-Merge*) operates freely. The challenge to be tackled on is how to explain the facts observed in (6) and (7) without restricting the applicability of movement.

At first glance, the situation might seem considerably convoluted. However, once we take into consideration the functional aspects of (6) and (7), we can overcome this situation. To demonstrate this, let us begin by looking over (6a) from a functional perspective. In this case, the nominal *it* in the subject position of the matrix clause is merely an expletive with no semantic content. Its semantic content is complemented by the CP at the end of the sentence. Semantically, the CP functions as the subject of the whole sentence. Keeping this functional aspect in mind, consider next (6b). Here, the noun phrase *Oscar* in the subject position of the matrix clause is extracted from the moved constituent within the embedded clause. If this noun phrase is interpreted as subject, a question arises: how should we interpret the CP at the end of the sentence? Conversely, if we assume that the CP functions as subject for semantic interpretation, what grammatical role could the extracted noun phrase perform? Therefore, in (6b), when *Oscar* moves to the subject position of the matrix clause, a situation inevitably arises where either this moved noun phrase or

the CP at the end of the sentence, or both, fail to receive any grammatical role. This leads to functional deficiency, hence resulting in ungrammaticality. The same situation holds in (7b). Using the current terminology of generative grammar, we can make the following paraphrase: either the moved noun phrase or the CP at the end of the sentence fails to meet legibility conditions on the conceptual-intentional interface, and hence the derivation cannot converge for semantic interpretation.⁵ It is worth emphasizing that this functional approach to PIM cases does not attribute their ungrammaticality to the A- vs \bar{A} -distinction of syntactic positions and/or movements.

5 Extending a functional perspective to IM

As we have demonstrated above, functional insights help untangle the intricacy about PIM. In what follows, we argue that this functional perspective can be extended to normal IM cases.

For illustration, we repeat the orthodox case of IM below:

(9) * $John_i$ seems [_{CP} t_i (that) [_{TP} t_i likes ice cream]] (= (2)).

To anticipate our conclusion, the ungrammaticality of (9) can be attributed to functional deficiency very like that of PIM cases. In (9), if *John* stays in situ and the expletive *it* is placed in the subject position of the matrix clause, the sentence becomes grammatical:

(10) It seems [_{CP} (that) John likes ice cream].

⁵For legibility conditions, see Chomsky (2000), who identifies them as conditions imposed by the external systems including semantics and pragmatics.

Here, *it* serves as an expletive, whose semantic content is complemented by the CP at the end of the sentence. Consequently, the semantic equation holds between *it* and the CP, allowing the latter to function as subject for semantic interpretation. Such an equation never holds in (9), however. This is because *John* has its own semantic content, which is by no means equalized to that of the CP at the end of the sentence.

Therefore, if *John* were to function as subject at its landing site, the CP would cease to function as such.

Conversely, if the latter were to adhere to performing the grammatical role of subject, what grammatical role should the former be able to perform? This dilemma renders either *John* or the CP functionally uninterpretable, yielding functional deficiency. The ungrammaticality of (9) thus falls into place without recourse to the notion of IM.

The same reasoning can be applied to the ungrammaticality of (4), repeated as (11) below:

- (11) a. * $John_i$ seems [_{CP} t_i that it is certain [t_i to like ice cream]]] (=4a)
b. * $John_i$ seems [_{CP} t_i that it was told t_i [that Mary was a genius]]] (=4b)

Recall that (11) was presented to prove that the ungrammaticality due to IM cannot be blamed on Case duplication: in the launching site of subject raising, Case assignment is inapplicable. Although (11) differs from (9) in this respect, we should note that these examples encounter the same dilemma alike: that is, in (11) the semantic equation does not hold between *John* at the subject position of the matrix clause and the CP at the end of the sentence, which precludes either of these two from being functionally interpreted. (11) hence incurs functional deficiency much like (9). In consequence, we can attribute the ungrammaticality of (11) to the same reason as that of (9): both examples are functionally deficient, hence ungrammatical. A

uniform explanation for them thus follows under a functional perspective. In this light, we can conclude that their ungrammaticality is orthogonal to whether the movements involved are improper or not.

Incidentally, one might suspect here that (3) too falls into the same sort of functional dilemma as (2) and (4). However, recall that (3) differs from (2) and (4) in that the former disables Case assignment in the landing site of A-movement but the latter in the launching site of \bar{A} -movement. In section 2, we have identified the lack of (Nominative) Case assignment in a certain position as the absence of any grammatical role in that position (referring to such position as a lethal A-position after Moulton 2007 and Deal 2009). In (3), therefore, the landing site of A-movement receives no grammatical role in the first place. Consequently, (3) has no way to allocate any grammatical role to the A-moved noun phrase, hence incurring functional deficiency. In this sense, (3) is not rendered functionally deficient by such a dilemma that (2) and (4) encounter.

We have so far approached not only PIM cases ((6) and (7)) but also IM cases ((2) (= (9)), (3), and (4) (= (11))) in terms of a functional perspective. This functional approach is also amenable to the fact witnessed in (12).

(12) What_{*t*} did it seem [_{CP} that John likes *t*_{*i*}]?

This sentence is utterly grammatical in contrast to (9). One might be tempted to relegate this difference to the types of movements involved: in (12), *what* undergoes \bar{A} -movement, while in (9) *John* undergoes A-movement. Namely, the movement involved in (11) is not defined as improper, hence the sentence is syntactically ruled in. Our approach offers a distinct explanation. In (12), it is important to note that the semantic equation is maintained between the expletive *it* at the subject position of the matrix clause and the

CP at the end of the sentence. Owing to this equation, the latter can keep performing the grammatical role of subject. Consequently, (12) does not incur any functional deficiency unlike (9). The grammatical contrast between these two examples thus follows. It is noteworthy that this explanation has no recourse to the A vs. \bar{A} distinction between the movements involved. The crux of our approach is whether or not the remnant CP remains functionally interpretable.

6 Concluding remarks

In conclusion, not only the IM cases that we have reevaluated in this squib but also the PIM cases fall under the same umbrella: all of them are functionally deficient, hence ungrammatical. This functional approach bestows upon us the following theoretical virtues. Firstly, we can account for both IM and PIM cases uniformly. As we have demonstrated, these cases share the constructional template Subject-Predicate-CP, where Subject is semantically equated to CP. Therefore, treating them uniformly is quite natural. Secondly, we no longer need to rely on the A vs. \bar{A} dichotomy of syntactic positions and/or movements. Since such a dichotomy lacks a clear definition (Safir 2019), any approach based on it inevitably faces difficulties in explaining the cases at hand in a plausible way. Thirdly, in terms of the functional approach presented so far, we can reconcile those cases with the Free-Merge model of generative syntax. As mentioned earlier, this model does not impose constraints on the applicability of movement. Instead, it necessitates constraints to be imposed on derivational outcomes derived from movement. In other words, such derivational outcomes should be evaluated at the conceptual-intentional interface in order to determine whether they can be semantically interpretable or not. Our functional approach meets this requirement. These theoretical merits, taken together, suffice to conclude that the present approach is worthy of advancement.

Before closing this squib, it should be repeated with emphasis that our intention is not to criticize the state of the art in generative grammar by revealing several challenges that this formalist camp faces in coping with IM and PIM. Rather, we only hope to have proven that borrowing insights from functionalism facilitates surmounting such challenges against a formalist approach such as generative grammar. It would be serendipitous if this discovery fosters a seamless collaboration between the formalist and the functionalist camps, allowing them to expand the range of explainable phenomena.

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