

Syntactic and Semantic Interactions with Movement

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1 Overview

This paper investigates several scenarios that result in interactions between Syntactic Movement and other processes in language generation, specifically interactions between DP-Movement and PI licensing and between WH-movement and Binding Principles.

2 Interactions with NPIs and Semantic Scope

According to Giannakidou (2011), in order for a sentence to be considered Grammatical, it must be both Syntactically well formed AND Semantically able to be assigned a truth value. It is by this means that Polarity Item licensing conditions are able to cause a sentence to be ungrammatical, because, depending on their position in the sentence structure, they can force a sentence not to have a valid Semantic truth value.

2.1 Polarity Items and their contexts

Giannakidou mentions two classes of Polarity Items: Positive Polarity Items (PPIs) and Negative Polarity Items (NPIs) and describes several theories for the contexts they can take. It is important to us to consider how the grammaticality of a sentence can be affected by movement, taking the initial position and moved position of a PI, specifically an NPI. Below are listed some of the hypothesized licensing contexts for an NPI:

1. Negation: When a Negation (no, -n't, never, etc.) c-commands an NPI, it is licensed. This is the classic licensing environment for an NPI, but it fails to explain NPI grammaticality in questions, conditionals, or contexts where near-negations (few, hardly, etc.).
2. Downward Entailment: Ladusaw (1980) proposes Downward Entailment as the licensing environment for NPIs. f is a Downward Entailing Operator iff $B \subseteq A$ and $f(A) \rightarrow f(B)$. For example:
 - We **know** *he ran quickly* \rightarrow We **know** *he ran*, indicating upward entailment, because *he ran quickly* is a more specific version (a subset) of *he ran*.
 - On the other hand, We **doubt** *he ran quickly* \nrightarrow We **doubt** *he ran*, because **doubt** is a Downward Entailing Operator. Rather, We **doubt** *he ran* \rightarrow We **doubt** *he ran*

This explains NPI grammaticality in near-negations.

3. Nonveridicality: Giannakidou (1994) proposes Nonveridicality as the licensing condition for NPIs. f is a Nonveridical operator iff $f(A) \rightarrow A$. For example:
 - He *is driving* **carefully** \rightarrow He *is driving*, so **carefully** is veridical
 - He **usually** *drives carefully* \nrightarrow He *drives carefully* (right now), so **usually** (and, more generally, habitual aspect) is nonveridical
 - He **doesn't** *drive carefully* \nrightarrow He *drives carefully*, so **doesn't** (and, more generally, all negations) are nonveridical. Rather, He **doesn't** *drive carefully* $\rightarrow \neg$ He *drives carefully*, so all negations are considered antiveridical.
 - We **doubt** *he ran* \nrightarrow He *ran quickly*, so **doubt** (and, more generally, all Downward Entailing Operators) is nonveridical

This additionally explains NPI grammaticality in conditionals and questions.

In the remainder of this section, we will see some examples of DP-Movement bringing NPIs into / out of their licensing contexts, and observing the effect of this interaction on the grammaticality of the sentence.

2.2 Semantic Scope

Semantic Scope is important for the Logical Form. It allows some sentences to have multiple meanings in the LF. For example, the sentence "Somebody loves everybody" can mean "There exists some person X, such that for all people Y, X loves Y" OR it can mean "For all people X, there exists some person Y, such that Y loves X". In the first case, person A loves person B and C and D and E..., while in the second case, person A loves B, person B loves C, C loves D, and so on, until some person Z loves A. In the sentence "Somebody loves everybody" is grammatical in both of its meanings, because "somebody" (the only PI here) is a PPI that is not antilicensed.

2.3 Interactions

Consider the following paradigm. In each sentence, DP-Movement is triggered by the Extended Projection Principle, moving a Subject containing a PI from the embedded clause to the main clause. The original (VP-internal) reconstruction site is marked off with square brackets, just like where the Subject appears in the surface form of the sentence. In addition to an overall grammaticality rating at the beginning of the sentence, a local grammaticality rating is at the beginning of each bracketed phrase:

2.3.1. ✓[✓Somebody from New York] is likely to [✓]win the lottery

2.3.2. ✓[✓Somebody from New York] is not likely to [*]win the lottery

2.3.3. *[*Anybody from New York] is likely to [*]win the lottery

2.3.4. *[*Anybody from New York] is not likely to [✓]win the lottery

In sentence 1, both reconstruction sites are in a licensed environment for a PPI, so the sentence is grammatical overall. Like with the sentence "somebody loves everybody", two meanings, "There's this person from New York whose name I forgot, but they bought up 90% of the tickets, so they will probably win" OR "Whoever wins, they're probably from New York since so many people live there" can be interpreted from this sentence.

In sentence 2, we might expect this to be ungrammatical because PPI "somebody" is

antilicensed in its initial reconstructed position, but because one of the positions is still grammatical, the meaning "There's this person from New York whose name I forgot, but since they bought only a single ticket, they probably won't win" can still be interpreted from this sentence.

In sentence 3, notably, both positions are not licensed. The sentence is, accordingly, ungrammatical. One might try to disagree, and claim this sentence is grammatical, but that sense uses the Universal Qualifier (Free Choice) meaning of "any", rather than the NPI meaning (the Existential Qualifier).

In sentence 4, we notice that the lower (unpronounced) copy of NPI "anybody" is licensed by negation, but during the movement operation, it is removed from the context. With this, the NPI meaning is lost again, and the sentence is rendered ungrammatical.

From these examples, it is apparent that the PF copy of an NPI must be licensed, as this is the simplest explanation that explains the grammaticality of the first two examples and the ungrammaticality of the last two.

2.4 Surface Scope in a V2 language (German)

In V2 languages such as German, movement patterns exhibit another way of producing interactions with semantics: their spec-CP movement operation. For this operation, after the main T head has moved to the C position, there is the rule that something must move to the spec-CP position. This can be, and often is, the subject of the sentence, but direct or indirect objects and even adverbials could take that position instead.

In addition to being a V2 language, German exhibits surface scope, which means that operators that occur earlier in the sentence will have scope over those that occur later in the sentence. Consider the following pair of sentences:

2.4.1. [Jemand aus New York] gewinnt [wahrscheinlich] das Lotto

[Someone from New York] wins [probably] the lottery

”There’s this person from New York who is probably going to win the lottery”

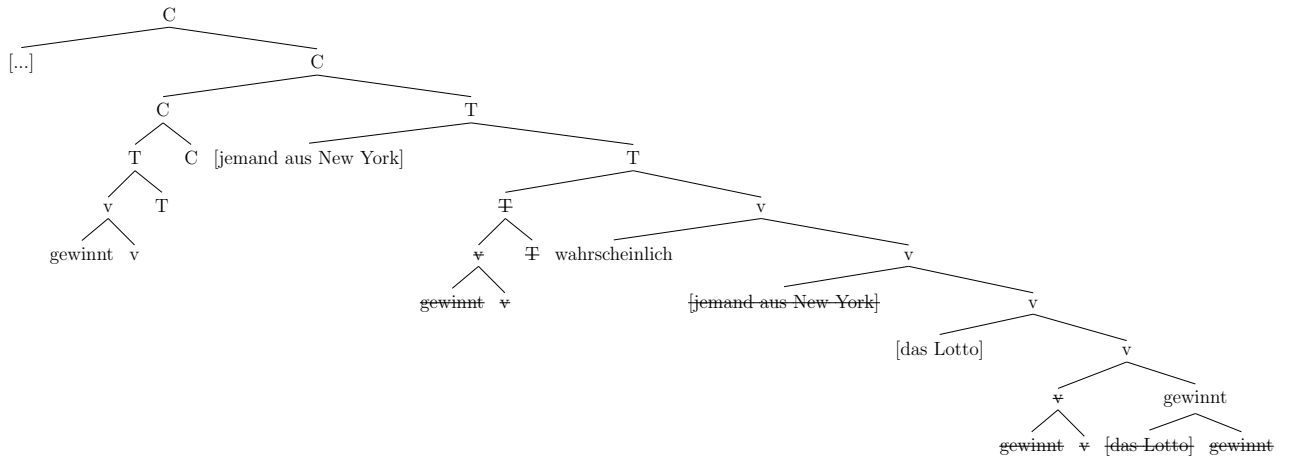
2.4.2. [Wahrscheinlich] gewinnt [jemand aus New York] das Lotto.

[Probably] wins [someone from New York] the lottery

”Whoever is going to win the lottery is probably someone from New York”

Note that, in German, the word ”jemand” is NOT a PPI like the English translation ”somebody”. Additionally, German varies from English in that it does not allow raising in constructions of the form ”X is likely to Y”; such sentences could be translated to a structure like ”it is likely, that X Y”, or ”X probably Y”. My translation chooses the latter option. Crucially, there is still movement in this sentence due to the V2 nature of German.

A tree of the above sentence, immediately prior to the spec-CP movement operation, would look as follows (note that DPs have been compressed to a single node to save space):



The spec-CP position (denoted with [...]) can take [Jemand aus New York] or [wahrscheinlich], or even [das Lotto]. Whichever element has focus will be brought to the spec-CP position.

3 Interaction with Binding Principles

In this section of the paper, we will see some instances where WH-movement interacts with the Binding Principles, leading to some interesting results.

3.1 Principle A

3.1.1. ✓[*Which picture of *himself_i*] did *John_i* [✓] prefer [✓]?

Notice that the surface position of *himself* is in violation of Binding Principle A, because it is an unbound anaphor. However, we see that the two lower positions (both along the A and A' chains) are bound in compliance with Binding Principle A.

3.2 Variable Binding

3.2.1. ✓[*Which of *his_i* assignments] did *every student_i* [✓] submit [✓] on time?

Because *every student* does not bind *his* in the surface position, that copy is in violation of Variable Binding. But once again, we see that both lower copies of the WH-phrase adhere to Variable Binding conditions.

3.3 Principle C

3.3.1. ✓[✓Which *machine_i*] did he remove [✓]from *it_i*'s storage place?

3.3.2. *[✓Which *machine_i*'s storage place] did he remove *it_i* from [*]?

In this pair of sentences, we see an element within a WH-phrase binding from within its initial position (first sentence) or being bound from its initial position (second sentence), but moving to a position where it binds. The fact that the second sentence is ungrammatical shows that a Principle C violation in the initial position of the bound R-expression renders a sentence ungrammatical, even if that R-expression moves out of the position.

3.4 Movement with two coreference pairs (Legate 2003)

3.4.1. ✓[Which of the papers that *he_i* gave *Mary_j*] did *every student_i* [✓] ask *her_j* to [*] read [*] carefully?

3.4.2. *[Which of the papers that *he_i* gave *Mary_j*] did *she_j* ask *every student_i* to [*] revise [*]?

In these two examples taken from Legate (2003), we see that in the initial and final surface position, both WH-phrases here are violating a Binding Principle. However, the first sentence contains a single position where no Binding Principles are violated: *every student* binds *he* and *Mary* is not bound by *her*. This suggests that having even one valid unpronounced position along the A' chain is enough to make the sentence valid.

3.5 Evans-style context

3.5.1. $\checkmark[\checkmark\text{Who}_j]$ did he_i vote for $[\checkmark]$?

3.5.2. $\checkmark[*\text{Who}_i]$ did he_i vote for $[\checkmark]$? (considering WH-phrase as an anaphor)

3.5.3. $\checkmark[\checkmark\text{Who}_i]$ did he_i vote for $[*]$? (considering WH-phrase as an R-expression)

3.5.4. $\checkmark[\checkmark\text{Who}_i]$ $[\checkmark]$ voted for himself_i?

For this last example, we see that accidental coreference adds additional complexity to the picture. The first sentence shows the unobjectionable grammaticality of a question without accidental coreference. The second and third show a question with accidental coreference (the asker did not know that two of the people mentioned were actually the same. There are then two ways to consider the WH-phrase, as an R-expression (in which case, its initial reconstructed position is in violation of Principle C) or as an anaphor (in which case, its surface position is in violation of Principle A). This question is nonetheless doubtless grammatical, and since the interaction "Who did he vote for?" "Himself", it is suggested that the WH-phrase is treated like an anaphor in the mind of the hearer, which goes along with the previously observed data suggesting that unpronounced lower positions are more important for determining grammaticality when movement and binding principles interact. Lastly, the fourth sentence illustrates that this ambiguity is not a problem in cases where the WH-phrase is definitely not an anaphor, as in this sentence where both the initial and surface position of the WH-phrase complies with binding principles.

4 Summary of findings

In conclusion, we can see that semantics and syntax can influence each other, as well as that concurrent syntactic processes can interact in emergent ways. Notably, from the examples investigated here and in my presentations, all movement-semantics interactions apparently depended on the surface positions of elements, while for grammaticality judgements in cases of movement-binding interactions, only unpronounced reconstruction sites needed to be taken into account. Naturally, this could also stem from the fact that only DP-movement was considered in the first section and only WH-movement was considered in the second, so this distinction may arise from that fact instead of from what is interacting with movement.

5 Sources:

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