

ON THE SYNTACTIC AND NON-SYNTACTIC ASPECTS OF THE GRAMMAR OF ANAPHORS AND PRONOUNS

1. Introduction

This paper takes a close look at the referential properties of nominal phrases and the conditions which govern the necessary or possible anaphoric dependencies between different NPs in a sentence. Two main perspectives on the phenomenon, both grounded within formal, generative studies on language, are investigated here. The first one is Chomsky's (1981, 1986) classic model, in which the conditions on the distribution and interpretation of referentially dependent expressions are syntactic in nature. The second is Pollard and Sag's (1992) model, in which the relevant binding conditions are separated into syntactic and non-syntactic. The latter model has strongly influenced the recent rival Binding Theory (BT) of Culicover and Jackendoff (2005). Since the main language of illustration in the above-mentioned accounts is English, Polish has been examined here to verify the theoretical claims empirically against a broader range of data.

2. Essentials of binding

Consider the paradigmatic binding contrast observed in a wide variety of languages, illustrated in (1) and (2) with examples from English:

- (1) John_i likes him_{*i/j}.
- (2) John_i likes himself_{i/*j}.

The most natural interpretation of the sentence in (1) is that *John* and *him* cannot be coreferential, i.e., these two NPs cannot designate the same person. In an approach that captures the referential properties of NPs with indices, referential co-identity and referential distinctness can be captured as shown in (3). Under (3), *John* and *him* cannot bear the same index in (1) and therefore, the NPs can only be interpreted as disjoint in reference (Lasnik and Uriagereka 1988: 45):

- (3) a. If two NPs have the same index, they are *coreferential*.
 b. If two NPs have different indices, they are *disjoint in reference*.

In contrast to (1), *John* and *himself* in (2) must be coreferential. In the generative paradigm, NPs like *him*, *her*, *my*, etc. are referred to as pronouns; reflexive NPs such as *himself*, *herself*, *myself*, etc. and reciprocal NPs *each other* and *one another* are categorized as anaphors. What the contrast between (1) and (2) indicates is that anaphors must pick their reference from antecedents while pronouns need not and sometimes must not have antecedents in the syntactic structures in which they occur. In (1) above, the pronoun *him* is most likely to pick its referent from an entity salient in the larger situational contexts in which (1) is uttered, e.g. *Peter*, in the context in which (1), repeated below as (4b), is a response to (4a):

- (4) a. And what about Peter_i?
 b. John_i likes him_{*i,j}.

As *him* is most likely to be perceived as coreferential with *Peter* in (4), the interpretation of (4b) derives from the use of the sentence for communicative purposes and it arises in a pragmatically specific context (Haegeman 1998: 204). By contrast, the interpretation of reflexives like *himself* in (2) is determined grammatically.

To wrap up, it might be stated that the interpretation of referentially dependent NPs is controlled by semantic and/or pragmatic principles. Nevertheless, the contrast between (1) and (2) shows that the distribution and interpretation of anaphors and pronouns is constrained by syntactic constraints as well. This observation has been made in formal studies of a wide variety of languages (Chomsky 1981, 1986). First, with regard to contexts like the ones in (1) and (2), it might be concluded that anaphors and pronouns are in complementary distribution in the syntactic structures in which they occur, i.e., where pronouns can occur, anaphors cannot, and vice versa. Secondly, anaphor-binding and pronominal disjoint reference hold within a local domain, as demonstrated in (5):

- (5) a. Bill_i thinks that John_j likes himself_{*i/j}.
 b. Bill_i thinks that John_j likes him_{i/*j}.
 c. Bill_i hopes that *himself_i/he_i will win.
 d. Bill_i believed Kate to be likely to praise *himself_i/him_i.

The syntactic binding conditions on anaphors and pronouns are captured informally in Lasnik and Uriagereka (1988: 31) as shown in (6), where ‘nearby’ stands for some minimal syntactic domain in which binding conditions must be satisfied:

- (6) a. An anaphor must have an antecedent nearby.
 b. A pronominal must not have an antecedent nearby.

In Chomsky’s model of generative grammar, the grammatically determined aspects of the distribution and interpretation of anaphors and pronouns occurring in syntactic structures are underpinned by three crucial formal concepts: c-command, locality, and obligatoriness. These concepts are discussed in some below.

3. The formal treatment of c-command, locality, and obligatoriness of anaphor-binding

3.1. C-command

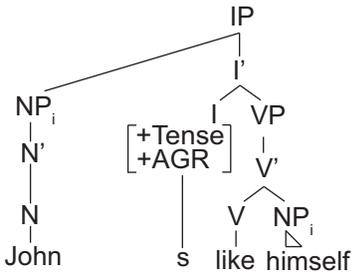
On the basis of the examples discussed so far, it might be assumed that an anaphor is bound if it is coindexed with an NP in some local domain. However, if this were the case, the ungrammaticality of (7b) would not be ruled out:

- (7) a. John_i likes himself_{i/*j}.
 b. *John’s_i mother likes himself_i.

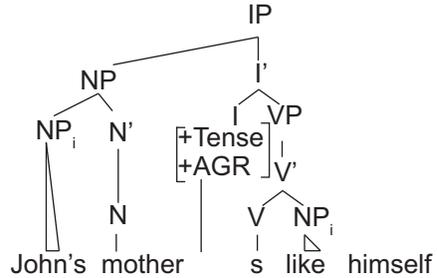
The impossibility of the NP *John* to serve as the antecedent for the anaphor in (7b) is taken as evidence that the syntactic relation between them is of the wrong type, in contrast to (7a). Specifically, the antecedent must *c-command* the anaphor, where c-command is defined as in (8) below:

- (8) C-command:
 A node A c-commands a node B iff:
 A does not dominate B;
 B does not dominate A;
 the first branching node dominating A also dominates B.

(9) a.



b.



To capture the structural difference between the coindexed NPs in the examples (7a) and (7b), the relation of *binding* might be defined as follows:

- (10) A binds B iff:
 A c-commands B;
 A and B are coindexed.

The diagrams in (10a) and (10b), which represent the structure of (7a) and (7b), respectively, clearly demonstrate that the NP *John* binds the reflexive in (7a) but not in (7b).

The binding condition on anaphors can thus be stated as in (11). To capture the complementarity of the distribution of anaphors and pronouns, the binding condition on pronouns in (12) can be posited alongside:

- (11) An anaphor must be bound nearby.
 (12) A pronominal must be free nearby.

3.2. Locality

Having clarified the formal aspect of the binding relation and introduced the binding conditions, it seems necessary to investigate the exact boundaries of the binding domain, by which a local domain within which an anaphor must and a pronoun cannot find its antecedent is understood. Chomsky (1981, 1986) suggests that binding is a local structural relation and that it is restricted to two categories, NP and IP. The relevance of the domain of NP for binding can be illustrated with the examples in (13):

- (13) a. Ann_i heard [_{NP} stories about herself_i].
 b. Ann_i heard [_{NP} Kate_j's stories about her_{i/*j}/herself_{*i/j}].

As can be observed in (13), an anaphor may look for its antecedent outside the including NP provided this NP does not have a potential binder in the specifier

position [Spec, NP] that functions as the subject of the larger NP. Otherwise, an anaphor must be bound within its NP. This syntactic constraint is known as the *Specified Subject Condition* (SSC) (Chomsky 1973), and it is formulated in (14) below:

- (14) The Specified Subject Condition (SSC):
 X may not bind Y in the structure:
 ... X ... [_{α} ... Z ... W₁Y W₂...] ...
 where Z is the subject of W₁Y W₂.

(14) accounts for both (13b) and (5d) above, as *Kate* is a specified subject that prevents anaphoric dependence between an external or outside antecedent and an embedded anaphor.

As noted before, IP counts as a proper binding domain for anaphors as well. However, the statement that an anaphor must be bound in the smallest IP in which it is included calls for some refinement in view of the sentence in (15a), which is grammatical in contrast to (15b):

- (15) a. Kate_i believes [_{IP} herself_i to be a hard-working student].
 b. *Kate_i believes [that [_{IP} herself_i is a hard-working student]].

The difference between (15a) and (15b) is that in the former the antecedent and the anaphor are in the same minimal domain of tense. In (15b), on the other hand, the antecedent and the anaphor are not in the same minimal tensed clause. The condition that blocks anaphor-binding from extending beyond the minimal domain of tense (15b) is the *Tensed Sentence Condition* (TSC) of Chomsky (1973), which is defined in (16) below:

- (16) The Tensed Sentence Condition (TSC):
 X cannot bind Y in the structure:
 ... X ... [_{α} ... Y ...]... where α is a tensed clause.

3.3. Obligatoriness

The third essential property that characterizes anaphor-binding is obligatoriness: an anaphor must be bound. That every anaphor must have a coindexed, c-commanding antecedent NP within its binding domain (i.e., the minimal NP with a specified subject or the minimal containing tensed IP) is manifested by the following contrasts:

- (17) a. *Himself will win.
 b. He will win.

- (18) a. *Pictures of himself will be on sale.
 b. Pictures of him will be on sale.
- (19) a. *It seemed to himself that he would win.
 b. It seemed to him that he would win.

4. Problems

The classic BT of Chomsky (1981, 1986) has not gone unchallenged. Several subsequent generative studies of the phenomenon have shown the three crucial properties that play a role in determining the distribution of anaphors and pronouns in syntactic structures to be problematic, as is briefly discussed below.

4.1. C-command

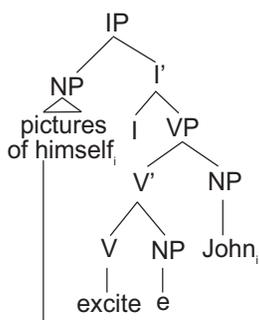
Pollard and Sag (1992), henceforth P&S, have drawn attention to reflexives embedded in NPs headed by so-called picture nouns, which seem to have special properties that distinguish them from ordinary reflexives. Namely, although the anaphors in (20) and (21) fail to be c-commanded within their minimal binding domains, the sentences are grammatical, contrary to the predictions of the syntactic condition on anaphor-binding. Therefore, P&S have postulated that such anaphors should be exempt from the syntactic constraints on binding:

- (20) [_{NP} Nude pictures of herself_i] do not offend Mary_i.
 (21) [_{NP} Pictures of himself_i] excite John_i.

However, the problem posed by examples like (20) and (21) need not be a serious counterexample to the syntactic approach to binding conditions. In particular, the anaphors in (20) and (21) can be analyzed as bound in their binding domains assuming a Larsonian analysis of the structure of VP (Larson 1988: 366–68).

First, observe that the sentences in (20) – (21) include so-called psych-verbs, such as *offend*, *excite*, *worry*, *annoy*, *frighten*, *please*, etc. It seems that the subject of a psych-verb can contain a reflexive coreferential with the object NP, which is not possible with genuine transitives. The surface object of a psych-verb behaves like the subject of a transitive clause with respect to anaphoric dependencies in that it can bind an anaphor embedded within the surface subject. Thus, we might expect that at some level of syntactic derivation the surface psych-verb object c-commands the surface subject. For (21), Larson (1988) proposes the analysis given in (22) below:

(22)



The basic idea here is that psych-verbs are unaccusatives with two internal arguments. The verb *excite* fails to assign Case to *pictures of himself* and it also fails to assign an external theta role. This forces movement to subject position, as indicated. In the resulting structure the surface subject is a derived subject. Furthermore, it attains its position from a site lower than the surface object. Turning to the surface object, it is in fact a structural (VP) subject – the most prominent theta-marked argument in the theta grid of the verb. It c-commands and hence binds the anaphor in the NP which is the verb's sister prior to movement, which explains why the binding condition on anaphors is satisfied in (22). In this scenario, anaphors found in NPs containing picture nouns are not exempt from the syntactic binding conditions.

4.2. Locality

P&S have also argued against the locality constraint on anaphor-binding. According to them, the coindexing in (23) is not absolute and should not be enforced by the principles of grammar but rather, by some processing (*intervention*) constraints. Substituting the intervening NP *Tom* (which functions as the antecedent for the anaphor) with an inanimate NP improves the acceptability of picture noun reflexives coindexed with non-local antecedents, as shown in (24). For P&S, this proves that the extension of the local domain should not be captured under syntactically-determined constraints. Similar effects arise in the context of quantified and expletive intervenors, as demonstrated in (25):

- (23) Bill_i remembered that Tom_i saw [a picture of himself_{i/*j}] in the post office.
 (24) a. ?Bill_i remembered that *The Times* had printed [a picture of himself_i] in the Sunday edition.

- b. Bill_i suspected that the silence meant that [a picture of himself_i] would soon be on the post office wall.
- (25) a. Bill_i thought that *nothing* could make [a picture of himself_i in *The Times*] acceptable to Sandy.
 b. Bill_i knew that *it* would take [a picture of himself_i with Hilary Clinton] to get Sandy's attention.

Furthermore, the nature of the determiner introducing an NP containing an anaphor seems to affect acceptability of long-distance binding. For example, changing the determiner in (24a) to *the* or *that* to make the phrase more definite tends to enhance the acceptability of such examples, as shown in (26) below:

- (26) What Bill_i finally realized was that *The Times* was going to print [*that* picture of himself_i with Hilary Clinton] in the Sunday edition.

Following Kuno (1987), P&S take the reflexives in (23) – (26) to be licensed by the *point of view* principle, which is pragmatic rather than syntactic in nature. In other words, reflexives, particularly exempt picture noun reflexives illustrated in (23) – (26), fall outside the syntactic binding condition on anaphors and are assigned the antecedent whose viewpoint or perspective is represented in the text/larger linguistic and/or situational context. Such reflexives are analyzed by Kuno (1987) not as anaphors, but as *logophors*. The logophoric nature of some reflexives can be illustrated with the contrast in (27) from Kuno (1987: 164):

- (27) a. John_i knows that there is a picture of himself_i in the morning paper.
 b. * John_i still doesn't know that there is a picture of himself_i in the morning paper.

In (27b), *himself* is not a logophor, since if John is not in the requisite internal state, the reflexive cannot represent his perspective, unlike in (27a). Generally speaking, logophoric contexts are sentences with verbs of communication and mental state (e.g. *tell*, *know*, *expect*, etc.) and with psych-predicates (e.g. *worry*, *disturb*, *please*, etc.), whose experiencer arguments generate the point of view perspective on the situation. Notice that the reflexives in (27) lack antecedents in their local binding domain. For Kuno (1987) as well as for P&S, they are exempt from the syntactic part of BT. The reflexive in (27a) is licensed pragmatically under the point of view principle, while the reflexive in (27b) is not.

4.3. Obligatoriness

Finally, P&S have also pointed out the existence of discourse-bound reflexives in English, which violate the syntactic BT of Chomsky (1981, 1986) by not being bound in their binding domains:

- (28) a. Mary_i was extremely upset. That picture of herself_i on the front page of *The Times* would circulate all over the world.
 b. John_i was going to get even with Mary. That picture of himself_i in the paper would annoy her.

5. Implicit antecedents

As stated earlier, the BT formulated in Chomsky (1981, 1986) predicts that pronouns and anaphors are in complementary distribution. However, the predicted complementarity breaks down in certain circumstances. Consider (29):

- (29) a. John_i likes [_{NP} Bill's stories about him_i/ *himself_i].
 b. John_i likes [_{NP} stories about him_i].
 c. John_i likes [_{NP} stories about himself_i].

Given that the binding domain is defined identically for pronouns and anaphors, (29c) poses a problem for BT, as the sentence is grammatical despite the fact that the anaphor is not bound in its binding domain (the minimal including NP). To account for the cases where complementarity breaks down, Chomsky (1986) redefines the binding domain as the smallest domain in which all the grammatical functions of the head *could* be satisfied; in essence, the binding domain of the anaphor is extended outside the containing NP to the domain of IP just in case there is no potential binder within the NP:

- (30) Binding domain:
 The binding domain for α is the minimal *Complete Functional Complex (CFC)* that contains α and a governor of α in which α 's binding condition could, in principle, be satisfied.

Chomsky (1986) makes use of the notion 'potential binder,' i.e., an NP that c-commands an anaphor or a pronoun in the relevant domain. The presence or absence of a potential binder (in contrast to an actual binder) should have no effect on the condition on pronouns, since there is no requirement that a pronoun must be bound, i.e., that it must have a binder, in its binding domain. (29b) and (29c) are both licit under (30): in (29b) either there is no subject within the NP or there

is a null subject interpreted as non-coreferential with *him_i*, hence the pronoun is free. For (29c), Chomsky (1986) assumes that the NP is not a CFC for the anaphor, as it lacks a potential binder. In this case, the clause is the minimal CFC for the anaphor and (29c) is grammatical in compliance with BT.

6. Splitting the Binding Theory: evidence from Polish

To find out whether it is well-motivated to divide the conditions on the distribution and interpretation of reflexives and pronouns into two distinct kinds: the syntactic, which are underpinned by the notions of c-command, locality and obligatoriness, and processing and pragmatic constraints, which are not sensitive to these properties, as has been argued for by P&S as well as by Culicover and Jackendoff (2005), henceforth C&J, the two theoretical stands on the nature of binding relations in natural language should be verified against a broader range of linguistic data, preferably from different languages. In particular, if P&S and C&J are right, we can expect to find the processing and pragmatic effects in a wide range of languages.

While Chomsky's (1981, 1986) account applies to data from Polish, indicating some parametric variation with respect to the SSC (cf. Willim 1989), both P&S's (1992) and C&J's (2005) models run into problems confronted with Polish data. First, both P&S and C&J predict that in a sentence like (31) the reflexive *sobie* 'self' is exempt from the syntactic part of BT:

- (31) Jan_i przeczytał [_{NP} wszystkie artykuły o sobie_i/ *nim_i].
 'John_i read all the articles about (him)self_i/ him_i.'

Recall that P&S's argument against the syntactic nature of the binding condition on a reflexive included in an NP with a picture noun is based on its non-local character. Thus, if the reflexive in (31) is exempt from the syntactic part of BT, the binding relation is not expected to be constrained by locality and the anaphor can be expected to search freely for its antecedent outside the clause boundary. However, this is contrary to fact, as shown in (32):

- (32) a. *Jan_i upierał się, żeby przeczytane zostały wszystkie artykuły o sobie_i.
 'John_i insisted that all the articles about (him)self_i should be read.'
 b. *Jan_i chciał, żeby opowieści o swoim_i bracie okazały się wymyślone.
 'John wanted the stories about his_i (= self's_i) brother to turn out to have been made up.'

The fact that the anaphors in (32) cannot search for antecedents outside the minimal tensed clause suggests that picture noun reflexives should not be exempt from the syntactic constraints on binding. This is further verified by the fact that Polish does not license discourse-bound anaphors (cf. (28)):

- (33) Jan_i był wściekły. *[Swój_i artykuł/ Artykuł o sobie_i] został skrytykowany.
 ‘John_i was furious. *[An article by (him)self_i/ about (him)self_i] had been criticized.’

Furthermore, Polish does not confirm P&S’s prediction that anaphors embedded in picture NPs are sensitive to processing constraint effects, e.g. the prediction that introducing an inanimate intervener NP in a sentence or changing the determiner of a picture noun phrase to make it more definite improves the possibility of coindexing a picture noun reflexive with a non-local antecedent. There are no acceptability differences between (34) on the one hand and (36) – (37) on the other hand:

- (34) Piotr_i przypuszczał, że Jan_j opublikuje [zdjęcia ze swojego_{*i/j} koncertu].
 ‘Peter_i believed that John_j would publish [pictures from his (= self’s_{i/j}) concert].’
- (35) Piotr_i przypuszczał, że Jan_j opublikuje [tamto zdjęcie ze swojego_{*i/j} koncertu].
 ‘Peter_i believed that John_j would publish [that picture from his (= self’s_i) concert].’
- (36) Piotr_i nie wierzył, że *Newsweek* opublikuje [*zdjęcia ze swojego_i koncertu].
 ‘Peter_i did not believe that *Newsweek* would release [*pictures from his (= self’s_i) concert].’
- (37) Piotr_i bał się, że cisza oznacza, że [*to zdjęcie ze swojego_i koncertu] zatrzęsie opinią publiczną.
 ‘Peter_i was afraid that silence meant that [that picture from his (= self’s_i) concert] would shock the public opinion.’

Finally, Polish offers rather restricted evidence for the existence of (point of view) logophors in structures with psych-predicates:

- (38) a. ??[Artykuły o swoich_i programach] usatysfakcjonowały polityków_i.
 ‘[The articles about their (= selves’_i) programs] satisfied the politicians_i.’
 b. ?? [Zdjęcia ze swoich_i ostatnich wystąpień] zirytowały polityków_i.
 ‘[The pictures from their (= selves’_i) latest public appearances] irritated the politicians_i.’

In conclusion, the empirical data from Polish analyzed here indicate that exempting picture noun reflexives from the syntactic conditions on binding and splitting BT into the syntactic and non-syntactic part is not well-grounded. At the same time, the Polish data raise questions about the origin of non-local, especially pragmatically-bound anaphors, in language and their proper characterization in the theory of language.

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