Binding

Binding Theory determines the interpretation and distribution of pronouns and anaphors. It is formulated in terms of three principles, Condition A, which applies to anaphors, Condition B, which applies to pronouns, and Condition C, which applies to name and other referential expressions (R-expressions).

We have already discussed Condition C.

1 Condition C: a pronoun cannot refer to an R-expression that it c-commands.

We now focus on Conditions A and B of the binding theory.

1 Condition A

Condition A governs the distribution and interpretation of anaphors. Anaphors are dependent nominal elements, which must have a sentence-internal antecedent. Unlike pronouns, they cannot (generally) refer to a sentence-external contextual element.

Most languages have two kinds of anaphoric elements.

2 a. reflexives: himself, herself, themselves, myself, ourselves, yourself
   b. reciprocals: each other

The discussion here will focus largely on reflexives. Most of what we will propose for reflexives will also apply to reciprocals, but reciprocals introduce additional complexity which we will not get into here.

1.1 Properties of Anaphors

• Anaphors, unlike pronouns, must have an antecedent within the sentence.

(3) a. *Himself arrived.
   b. He arrived.

The ungrammaticality of (3a) can be plausibly attributed to an inability of himself to appear in a nominative position. (4) does not run into this problem.

(4) a. *[For himself to leave now] would be good.
   b. [For him to leave now] would be good.

• Anaphors must have feature-compatible antecedents.

(5) a. Stephin_i likes himself_i.
   b. *Claudia_i likes himself_i

(6) a. *Susan_i believes [himself_i to be a genius].
b. Susan believes [him to be a genius].

Pronouns do not require a sentence-internal antecedent. However, if they do have a sentence-
internal antecedent, then it must be feature-compatible with the pronoun.

(7) a. Vladislav\textsubscript{i} thinks that he\textsubscript{e_i/j} is a genius.
   b. Vladislav\textsubscript{i} thinks that she\textsubscript{e_j/e_i} is a genius.

• The antecedent of the anaphor must c-command the anaphor.

(8) a. *Stephin’\textsubscript{i}’s mother likes himself\textsubscript{i}.
   b. Stephin’\textsubscript{i}’s mother likes him\textsubscript{i}.
   c. *[That Stephin\textsubscript{i} is always ignored] irritates himself\textsubscript{i}.
   d. [That Stephin\textsubscript{i} is always ignored] irritates him\textsubscript{i}.

Pronouns do not have a c-command requirement. The antecedents of the pronouns in (8b, d) do
not c-command them.

• The antecedent of the anaphor cannot be ‘too far’ from the anaphor.

(9) a. *Stephin\textsubscript{i} thinks that Claudia likes himself\textsubscript{i}.
   b. Claudia thinks that Stephin\textsubscript{i} likes himself\textsubscript{i}.

The antecedent of a pronoun cannot be ‘too close’ to the anaphor.

(10) a. Stephin\textsubscript{i} thinks that Claudia likes him\textsubscript{i}.
   b. *Claudia thinks that Stephin\textsubscript{i} likes him\textsubscript{i}.

1.2 Binding Domains

The intuition is that anaphors must have a binder that is ‘close enough,’ while pronouns may not
have a binder that is ‘too close.’

(11) NP\textsubscript{1} binds another NP\textsubscript{2} iff NP\textsubscript{1} c-commands NP\textsubscript{2} and NP\textsubscript{1} and NP\textsubscript{2} are co-indexed.
   (An NP is bound iff there is an NP’ s.t. NP’ binds NP)

(12) a. Condition A: An anaphor must be locally bound.
   b. Condition B: A pronoun must not be locally bound.
   c. Condition C: An R-expression can not be bound.

What does locally bound mean? In particular, what constitutes local?
local in the context of the binding theory = binding domain

Thus the binding conditions can be restated as:

(13) a. Condition A: An anaphor must be bound in its binding domain.
   b. Condition B: A pronoun must not be bound in its binding domain.
   c. Condition C: An R-expression can not be bound.

(14) Binding Domain (Attempt 1): the binding domain of an NP is the smallest TP that contains
it.
1.3 Problems with 14

(14) goes quite far in capturing the examples we have seen so far. In fact, it explains every single example discussed in this handout up until this point. It can also explain cases of ambiguity like the following.

(15) They pointed the guns at each other.

Despite this, it is ultimately inadequate. ECM provides one environment where (14) makes incorrect predictions.

(16) a. Vladislav, believes [TP himself, to be a genius].
    b. *Vladislav, believes [TP him, to be a genius].

By (14), the binding domain of the subject of the embedded TP is the embedded TP. Therefore, we incorrectly predict that (16a) should be ungrammatical and that (16b) should be grammatical. One might think (17) to also be a counterexample.

(17) a. John, tried [TP to kill himself,].
    b. *John, tried [TP to kill him,].

Given our assumptions, it isn’t a counterexample. Why?

We might have the intuition that what is going wrong in (16) is that we are dealing with a non-finite TP and that therefore we should reformulate (14) as follows:

(18) Binding Domain (Attempt 2): the binding domain of an NP is the smallest finite TP that contains it.

However, ECM proves to be a problem once again.

(19) a. *Risto, considers [Liina to be fond of himself,].
    b. Risto, considers [Liina to be fond of him,].

By (18), the binding domain of himself/him in (19) is the entire sentence – the entire sentence is the minimal finite clause that contains the anaphor/pronoun. Hence (19a) is incorrectly predicted to be good and (19b) to be bad.

• Reverse engineering points out that we need to distinguish between the subject of an ECM infinitive and the object of an ECM infinitive. The binding domain of the subject of the ECM infinitive seems to be larger than that of the object of the ECM infinitive.

1.4 Reformulating Binding Domains

• Binding domain of the subject of the ECM infinitive includes the clause of the ECM verb.
• Binding domain of the object of the ECM infinitive includes only the ECM infinitive.

(20) Binding Domain (Attempt 3): the binding domain of an NP is the smallest clause that contains (i) the NP, (ii) its case-marker, and (iii) a ‘higher’ subject.
2 The Role of Subjects

(20), our last definition of binding domain, makes reference to the notion ‘subject.’ By ‘subject,’ we mean an NP in the [Spec,TP]. The new definition allows us to handle properly the examples in (21) and (22).

(21) Subjects
   a. Sebastien considers \([TP_him] to be intelligent\).
   b. *Sebastien considers \([TP_him] to be intelligent\).
   c. *Sebastien believes that \([TP_him] is intelligent\).
   d. Sebastien believes that \([TP_he] is intelligent\).

(22) Objects
   a. *Sebastien considers \([TP_Miguel to be fond of him]\).
   b. Sebastien considers \([TP_Miguel to be fond of him]\).
   c. *Sebastien believes that \([TP_Miguel is fond of himself]\).
   d. Sebastien believes that \([TP_Miguel is fond of himself]\).

2.1 Subjects Across Categories

Above we defined ‘subject’ as an NP in [Spec,TP]. This assumption requires revision. We already assume that subjects do not originate in [Spec,TP]. They are merged in lower \(\theta\)-positions from where they raise to [Spec,TP] to get case.

(23) a. Roland might \([VP_Roland visit Klaus]\).
   b. Roland might be \([AP_Roland nice]\).
   c. Roland might be \([PP_Roland in Amsterdam]\).
   d. Roland might be \([NP_Roland a star]\).

If we supply case to the various \(\theta\)-positions, then overt subjects can appear there.

(24) a. I watched \([VP_Roland visit Klaus]\).
   b. I find/consider \([AP_Roland nice]\).
   c. I want \([PP_Roland in Amsterdam]\).
   d. I consider \([NP_Roland a star]\).

So we will extend ‘subject’ to mean an NP that occupies the [Spec,XP] position of any XP.

2.2 Binding Domains don’t have to be TPs

The notion of binding domain made reference to ‘the smallest clause that contains the pronoun/anaphor.’ Now that we are talking about subjects across categories, we will need to replace ‘smallest clause’ by ‘smallest XP.’

The evidence:
(25) VP
   a. Ken$_i$ watched [$V_P$ Roland$_j$ hit himself$_{i/*j}$].
   b. Ken$_i$ watched [$V_P$ Roland$_j$ hit him$_{i/*j}$].

(26) AP
   a. Ken$_i$ considers [$A_P$ Roland$_j$ fond of himself$_{i/*j}$].
   b. Ken$_i$ considers [$A_P$ Roland$_j$ fond of him$_{i/*j}$].

(27) Binding Domain (Attempt 4): the binding domain of an NP is the smallest XP that contains
   (i) the NP, (ii) its case-marker, and (iii) a subject.

2.3 Optional Subjects

NPs allow for optionality with respect to subjects i.e. some NPs, but not all, have subjects. So NPs
constitute a binding domain or not depending upon the presence or absence of a subject.

Our theory makes correct predictions with regard to the cases in (28).

(28) a. Marc$_i$ will believe [any positive description of himself$_{i}$.]
    b. *Marc$_i$ will believe [Annie’s description of himself$_{i}$.]
    c. Marc$_i$ will believe [Annie’s description of him$_{i/*j}$.]
    d. Annie will believe [Marc’s$_i$ description of himself$_{i/*j}$.]
    e. Annie will believe [Marc’s$_i$ description of him$_{i/*j}$.]

What are the judgements about:

(29) Marc$_i$ will believe [any positive description of him$_{i}$.]

Our theory so far correctly predicts that (28a) is grammatical. For the same reason, it should
also predict that (29) is ungrammatical. This is indeed the judgement reported in the literature.
However, there seems to be a dialect split here. For some speakers, (29) is ungrammatical, while
for others it is ok.

Other examples are also found of environments where there is no complementarity between pro-
nouns and anaphors. These are for the most part cases where the anaphor/pronoun appears
inside an NP.

(30) a. Artemis$_i$ lost [a beautiful picture of herself$_{i}$ (that I had given her)].
    b. Artemis$_i$ lost [a beautiful picture of her$_{i}$ (that I had given her)].

(31) a. They$_i$ heard [stories about each other$_i$ /themselves$_i$].
    b. They$_i$ heard [stories about them$_i$].

Complementarity is not lost with all NPs.

(32) a. Jacob$_i$ took [a picture of himself$_i$ /’*him$_i$].
    b. Jacob$_i$ saw [a picture of himself$_i$ /’*him$_i$].
Speakers pretty consistently find complementarity in *take a picture* environments, but there seems to be optionality for at least some speakers otherwise. The generalization seems to be that complementarity holds in semi-idiomatic environments like *take a picture* or *tell a story*, but not generally.¹

In (30-32), the relevant NP is in object position. Non-complementary distribution also emerges when the NP is in subject position.

(33) a. Jonah_{t} thinks that \([TP \text{ [a beautiful picture of himself}_{t}]\) is hanging on the outside wall of the gym].
    b. Jonah_{t} thinks that \([TP \text{ [a beautiful picture of him}_{t}]\) is hanging on the outside wall of the gym].

Various scholars have taken cases where the complementarity between anaphors and pronouns breaks down to be instantiating a different module of grammar. They propose that anaphors that appear in these environments are *logophors*, which they argue have distinct properties (see Reinhart and Reuland (1993)).

Classical binding theory (see Chomsky (1981), Chomsky (1986)) does not make distinctions between anaphors in NPs and anaphors elsewhere. The following extensions were proposed to handle the special issues raised by anaphors in NPs.

## 3 Binding Theory Extensions

### 3.1 Accessible Subjects

Contrast (33), which is repeated here as (34), with (35).

(34) a. Jonah_{t} thinks that \([TP \text{ [a beautiful picture of himself}_{t}]\) is hanging on the outside wall of the gym].
    b. Jonah_{t} thinks that \([TP \text{ [a beautiful picture of him}_{t}]\) is hanging on the outside wall of the gym].

(35) a. *Jonah_{t} thinks that \([TP \text{ himself}_{t}]\) is intelligent].
    b. Jonah_{t} thinks that \([TP \text{ he}_{t}]\) is intelligent].

We will focus on the contrast between (34a) and (35a).

(36) Binding Domain (Attempt 4): the binding domain of an NP is the smallest XP that contains (i) the NP, (ii) its case-marker, and (iii) a subject. (= 20)

The binding domain for *himself* in both (34a) and (35a) is the embedded TP. Hence we predict that both should be ungrammatical. This is correct for both (35a) but incorrect for (34a).

Now consider how the binding domain for *himself* is determined for (34a) and (35a).

(37) a. For *himself* in (34a):
    case-marker of *himself* = *of*
    subject = *a beautiful picture of himself*

¹Implicit Arguments have been argued to play a role here. See Williams (1985).
b. For himself in (35a):
   case-marker of himself = ¹
   subject = himself

The problem intuitively is that the anaphor is either contained in the subject or is the subject. Such a subject is not ‘accessible’ to the anaphor. This suggests the following revision of the binding theory:

(38) Binding Domain (Attempt 5): the binding domain of an NP is the smallest XP that contains (i) the NP, (ii) its case-marker, and (iii) an accessible subject.

But don’t we predict that (35a) should be good? We do. But this is not a problem given that we have another way of ruling out (35a): himself is accusative but appears in a nominative position. To properly test the predictions made by (38), we would need a language which has nominative anaphors.

• himself in accusative subject positions does fine, but this is not surprising.

(39) a. Matt would like for himself to win.
   b. Matt considers [himself to be competent].

• We also need to say that each other cannot appear in nominative positions.

(40) a. *[Elena and Artemis], know that [each other is/are wonderful].
   b. [Elena and Artemis], know that [they are wonderful].

The binding domain of each other in (40a) is the entire clause and so it has to be blocked by something other than binding theory.

3.2 Binding Theory Compatibility

We are still left with the breakdown of complementarity between the distribution of anaphors and pronouns.

The problem of complementarity also arises with possessive pronouns.

(41) a. Maya likes her husband.
   b. Maya thinks that Idan dislikes her husband.
   c. [Idan and Dorit] like each other’s books.²

her as a possessive pronoun can be bound locally and also non-locally.

By the definition of binding domain sketched so far, in (41a), the binding domain of the pronoun should be the whole TP. This incorrectly predicts that (41a) should be ungrammatical due to a violation of Condn. C. One possibility is to just say that the possessive her is systematically ambiguous between a pronoun her and an anaphor her own. Thus (41a) would involve the anaphor and (41b) would involve the pronoun. This line of reasoning receives some support from the fact that English doesn’t seem to have a simplex possessive reflexive pronoun.

(42) a. Thomas, saw his sister.

²What are the judgements concerning: [Idan and Dorit] think that Maya likes each other’s books.
b. *Thomas saw himself’s sister.

Other languages do not have this lexical gap and there we find what our binding theory predicts.

(43) Hindi
   a. Thomas-ne apnii behin-ko dekh-aa
      Thomas-Erg self.f’s sister-Acc see-Pfv
      ‘Thomas saw his sister.
   b. Thomas-ne us-kii behin-ko dekh-aa
      Thomas-Erg he-Gen.f sister-Acc see-Pfv
      ‘Thomas saw his sister.

This line of reasoning may be correct but it does not account for the lack of complementarity in anaphor/pronoun distribution that we found with anaphors/pronouns inside NPs. These were cases where both a pronoun and an anaphor can felicitously appear.

(44) a. Bruce thinks that \[
\text{[a beautiful picture of himself/him]} \]
    is hanging on the outside wall of the gym.
   b. They heard stories about them/themselves.

If we reverse engineer from (44) and the basic binding conditions as we know them, we are forced to the conclusion that contrary to our assumption, anaphors and pronouns are not required to have the same binding domain. In both (44a, b), the binding domain of the anaphor would include the matrix subject, but the binding domain of the pronoun would not i.e. the binding domain of the anaphor would be bigger than the binding domain of the pronoun.

Why would anaphors and pronouns have different binding domains? Further why would the binding domain of the anaphor be larger than the binding domain of the pronoun?

The following answer suggests itself: anaphors need to be locally bound, while pronouns need to be locally free.

- So we want to give the anaphor a binding domain where it in principle has a chance to get bound i.e. there is an accessible subject.
- The binding domain for the pronoun can be more conservatively defined - any subject like element, accessible or not, will do.

Expletive subjects satisfy the in principle.

(45) a. *Miguel said that it seemed to himself that we were trying to speak Dutch.
   b. Miguel said that it seemed to him that we were trying to speak Dutch.

(46) Binding Domain (Final Attempt for now):
   a. For Anaphors: the binding domain of an NP is the smallest XP that contains (i) the NP, (ii) its case-marker, and (iii) an accessible subject.
   b. For Pronouns: the binding domain of an NP is the smallest XP that contains (i) the NP, (ii) its case-marker, and (iii) a subject.

It was mentioned earlier that there is speaker variation concerning the acceptability of John saw [a picture of him]. It is possible that this variation can be related to what counts as a subject in (46). The speakers who permit coreference would be analyzing the determiner as a subject, while those who do not allow for coreference will not allow it to satisfy the subject requirement.
4 Digression: Garden Path Sentences

(47) a. The daughter of the king’s son likes himself. (Christina Willis p.c.)
    b. The horse raced past the barn fell.
    c. I drove my aunt from Peoria’s car.

References