UNIT 5 PRONOUNS, REFLEXIVES, AND OTHER BOUND ELEMENTS

Structure

5.0   OBJECTIVES

The objectives of this unit are that at the end of this unit you should be able to

- recognize anaphora in English,
- understand the notion of coindexing based on reference,
- understand the principles of the Binding Theory,
- recognize the difference between anaphors and pronominals in the Binding Theory,
- understand why "empty categories" such as *PRO*, *pro*, and *NP-trace* are needed.

5.1   INTRODUCTION

5.1.1   Recognizing anaphora

In Unit 4, we have seen how verbal inflection plays a significant role in other aspects of clausal syntax as well. In this unit, we shall examine a very interesting set of elements whose distribution can be governed by the verb and by verbal inflection, as well as by other syntactic constituents also bearing relations to the verb and verbal inflection. This set of elements, moreover, bear certain special characteristics with regard to their **reference**, i.e., the entities that they -- and other syntactic constituents within or outside the same sentence -- may **refer** to, or denote. The special characteristic of the reference of any such element is that *it has no independent*

reference of its own -- instead, it "borrows" its reference from some other linguistic expression that refers to a particular entity or set of entities. Such an element, with its reference "borrowed" from the reference of some other expression, is said to belong to the set of **anaphora**. Individual items from the set of anaphora are often called **anaphoric devices**. Examples of anaphoric devices can be seen in the following sentences:

(1)   a.   *Sita* said that <u>she</u> was angry.

        b.   *Ram* hurt <u>himself</u>.

        c.   Harish says that there are politicians *who are not corrupt*, but I strongly doubt that there are any <u>such</u> politicians.

        d.   I asked them to *leave the house at once*, and they <u>did so</u>.

In each of the sentences (1a-d), the underlined expression takes its interpretation from the word or phrase in italics. Each underlined expression is an anaphoric device of a distinct kind: in (1a), *she* is a pronoun; in (1b), *himself* is a reflexive; in (1c), *such* is an anaphoric device for the modifying relative clause *who are not corrupt*; and in (1d), *did so* is an anaphoric device for the VF *leave the house at once*.

5.1.2 Reference and coindexing

We have already learned about coindexing in previous units -- expressions that refer to the same entities or sets of entities are coindexed. Let us now look at the notion of what "referring to" means. The matter of reference to entities in the real world is a large philosophical issue, and philosophers of language continue to write hefty tomes on it; however, for the purpose at hand we need only distinguish between two different kinds of identity of meaning that can hold between two expressions that are coindexed. These are (i) **identity of sense** and (ii) **identity of reference**. Consider the following sentences:

(2)   a.   This <u>little boy</u> is naughtier than that <u>one</u>.

        b.   John <u>loves his wife</u>, and <u>so does</u> Bill.

In the sentence (2a), *this little boy* and *that one* clearly refer to two distinct little boys. Yet the pro-N' form *one* can replace the N' *little boy* in the NP *that little boy* (for an understanding of what "NP" and "N' " are, see Unit 1). This is because the N' *little boy* and the pro-N' anaphor *one* have **identity of sense**, i.e., they refer to the same "kind" of individuals, even though they do not have **identify of reference**, i.e., do not refer to the same individual. The sentence (2b), on the other hand, is ambiguous in its interpretation: it can have either of two readings, which are as follows:

(3)   a. $John_x$ loves his_x wife, and Bill loves $John's_x$ wife.

           (-- Both love the same individual.)

        b. $John_x$ loves his_x wife, and $Bill_y$ loves his_y wife.

           (-- They love their respective wives.)

In the reading (3a), the expression *so does* is an example of VP-anaphora that has replaced the verb phrase [*loves his wife*] under identity of reference; in the reading (3b), it is an example of VP-anaphora that has replaced [*loves his wife*] under identity of sense. Identity of reference is sometimes also called **strict identity**, and identity of sense is then called **sloppy identity**.

The expression from which an anaphoric device such as the VP-anaphora *so does* or the pronoun *his* takes its reference is said to be the **antecedent** of the anaphoric device. Anaphora, therefore, must have antecedents -- since otherwise they would not have any reference at all.

5.1.3 The Binding Theory

We now come to a very crucial module, or sub-part, of the theory of generative grammar, i.e., the **Binding Theory**. The Binding Theory consists of three Principles, of which Principles A and B have major substantive content and Principle C is a kind of "default" or "elsewhere" principle. The Principles of the Binding Theory are the following:

> (4) **Binding Theory**
> > ***Principle A***: An anaphor must be *bound* in its local domain.
> > ***Principle B***: A pronominal must be *free* in its local domain.
> > ***Principle C***: A referential expression must be *free* *everywhere*.

These principles may look like Greek to us right now, but let us not be put off by this -- we shall soon get to see what they mean and how they work. First we need to see what a **local domain** is.

A **local domain** for a syntactic constituent X -- irrespective of whether X is an anaphor, a pronominal, or a proper noun or lexical noun phrase, i.e., a referential expression -- is the minimal NP or IP dominating X, a governor of X, and (optionally) a potential antecedent of X. Consider the following example sentences:

> (5) a.   [$_{IP}$ Sita$_i$ does not [$_V$ despise] [$_{NP}$ <u>herself$_i$</u>].]
> b.   [$_{IP}$ John$_x$ told Billy [$_{NP}$ a story [$_P$ about] [$_{NP}$ <u>himself$_{x/y}$</u>]].]
> c.   [$_{IP}$ John$_x$ loves [$_{NP}$ [$_{NP}$[$_{POSS}$] <u>his$_x$</u>] [$_N$ wife]].]

In the sentences (5a) and (5b), IP counts as the local domain for the underlined reflexives (*herself* and *himself*, respectively), because this is the minimal IP dominating the reflexive, its governor (the verb *despise* in (5a) and the preposition *about* in (5b)), and one or more potential antecedents for the reflexive. In the sentence (5c), the local domain for the possessive pronoun *his* could be the NP [*his wife*], since (according to the definition of m-command) the noun *wife* would count as the closest "governor" of the possessive pronoun; note that the presence of an antecedent is optional, so the NP *his wife* meets the requirements for the local domain of *his*.

The reason why IP, and not the larger NP (*a story about himself*), is taken as the local domain for the reflexive *himself* in (5b) is Principle A of the Binding Theory. Reflexives, including emphatic reflexives (as in *Sita herself came here yesterday*), and reciprocals (such as *each other, one another*) belong to the class of **anaphors**, the kind of anaphora that necessarily require an antecedent close to them, typically within the same clause. Principle A of the Binding Theory says that an anaphor must be bound, i.e., coindexed with an antecedent, within a local domain. There is no antecedent for the reflexive *himself* in (5b) within the NP *a story about himself*, and yet the sentence is found to be grammatical in English; moreover, the reflexive *himself* can be bound by either of two possible antecedents, *John* and *Bill*, both of which occur inside the (minimal and only) IP.

We now look at further details of the syntax of anaphors, pronominals, other bound elements, and referential expressions in relation to the principles of the Binding Theory.

5.2 ANAPHORS

5.2.1 Reflexives

We now look at the different kinds of anaphors that the English language most obvious class of anaphors is the class of reflexive pronouns such as

(8)   a.   [$_{IP}$ <u>Ram and Ali</u>$_x$ [$_V$ respect] [<u>each other</u>$_x$/<u>one another</u>$_x$.]]

        b.   [$_{IP}$ <u>The two participants</u>$_y$ are envious [$_P$ of] [<u>each other</u>$_y$/<u>one another</u>$_y$].]

        c.   [$_{IP}$ <u>The three countries</u>$_z$ might [$_V$ fight] [<u>one another</u>$_z$/??<u>each other</u>].]

In these sentences, the phrases *each other* and *one another* are reciprocals coindexed with **Ram and Ali** in (8a), *the two participants* in (8b), and *the three countries* in (8c), respectively: the latter lend their reference to, and are therefore the antecedents of, the respective reciprocal expressions in the three sentences. (When there are exactly two members in the antecedent of a reciprocal, the reciprocal can be either *each other* or *one another*; however, when there are more than two members in the antecedent, as in *the three countries* in (8c), the preferred reciprocal is *one another* rather than *each other*.) Note that the IP is the local domain for each of the three sentences, and it also contains the antecedent NP for each reciprocal expression. Reciprocals as anaphors are thus bound within their local domains, and conform to Principle A of the Binding Theory, just as reflexives do.

Now consider the contrast between the following sentences, one grammatical and the other ungrammatical:

(9)   a.   [$_{IP2}$ <u>They</u>$_i$ [$_V$expect]ed [$_{IP2}$ <u>each other</u>$_i$ to win].]

        b.   *[$_{IP1}$ <u>They</u>$_i$ expected [$_{IP2}$ that [<u>each other</u>$_i$] [$_I$ would] win].]

The sentence (9a) is an Exceptional Case-Marking sentence, so the reciprocal *each other* in (9a) is exceptionally governed by the main-clause verb *expect*; the local domain for *each other* is therefore not IP2 but IP1. In the ungrammatical sentence (9b), however, the reciprocal *each other* is governed within the finite complement clause IP2 by the I (NFL), the modal auxiliary *would,* so the local domain for *each other* here is IP2; but there is no antecedent for *each other* within IP2, so here the reciprocal is not bound within its local domain. The sentence thus violates Principle A of the Binding Theory, and is therefore ungrammatical.

Reciprocals as anaphors thus also conform to Principle A of the Binding Theory.

5.2.3 Emphatic reflexives

Reflexives can be used in a special way in English, as **emphatic reflexives**. Emphatic reflexives almost trivially obey Principle A of the Binding Theory, since they simply serve to emphasize their antecedent and do not have the status of argument NPs in themselves. Examples are the following:

(10)   a.   [$_{IP}$ <u>Mary</u>$_x$ baked this bread <u>herself</u>$_x$.]

        b.   [$_{IP1}$ I heard that [$_{IP2}$ <u>the President himself</u> was present on that occasion].]

        c.   *[$_{IP1}$ I heard that [$_{IP2}$ the President <u>myself</u> was present on the occasion].]

        d.   [$_{IP1}$ I <u>myself</u> heard that [$_{IP2}$ the President was present on the occasion].]

In the sentence (10a), the emphatic reflexive *herself* is coindexed with and serves to emphasize *Mary*, the subject of its local domain IP. In the sentence (10b), the antecedent of the emphatic reflexive is *the President*, which is the subject of its local domain IP2. The sentence (10c) is unacceptable, because the antecedent of the emphatic reflexive *myself* is *I*, which occurs outside IP2, the local domain for the reflexive *myself*, causing a Principle A violation. Finally, the sentence (10d) is grammatical, with the emphatic reflexive *myself* occurring just after its antecedent *I*,

yourself, himself, herself, ourselves, yourselves, themselves: these are simply called reflexives in generative grammar (since "pronouns" refer specifically to personal pronouns such as *I, you, she, we, they*, etc.). Consider the following sentences:

(6) a. [$_{IP}$ Sita accidentally [$_V$ hurt] [herself/*himself].]
     b. [$_{IP1}$ I want [$_{IP2}$ Mary to [$_V$ behave] [herself/*myself]].]
     c. Mary feels that [$_{IP2}$ John is not sure [$_P$ about]
         [himself/*ourselves]].]

Note that the reflexive must agree in person, number, and gender with the antecedent NP closest to it (and underlined) in each one of these sentences. In (6a), *himself* cannot occur because it does not agree with the antecedent *Sita* in gender; in (6b), *myself* cannot occur because it does not agree with the antecedent *Mary* in number; and in (6c), *ourselves* cannot occur because it does not agree with the antecedent *John* in number and person. All of these sentences conform to Principle A of the Binding Theory, according to which a reflexive must have its antecedent within its local domain. Note that the local domain for the reflexive *herself* in (6a) is the (simple, single) IP, and the antecedent *Sita* occurs within this IP. The local domain for the reflexive *herself* in (6b) is the infinitival complement clause IP2, since this contains *herself* and the verb *behave*, which is the governor of *herself*; and the antecedent of *herself*, i.e., *Mary*, is contained within IP2, so the reflexive is bound within its local domain, thereby making the sentence (6b) conform to Principle A. Finally, the local domain for the reflexive *himself* in the sentence (6c) is the finite complement clause IP2, since this contains *himself* and the governor of *himself*, viz., the preposition *about*; and *John*, the antecedent of *himself*, is contained within the local domain IP2 of the reflexive *himself*, so the sentence (6c) conforms to Principle A of the Binding Theory.

Now let us briefly consider an Exceptional Case-Marking sentence such as the following:

(7) [$_{IP1}$ Ram [$_V$ believes] [$_{IP2}$ [himself/*herself] to be super-intelligent].]

In this sentence, the local domain for the reflexive *himself*, which has the antecedent, *cannot* be the complement clause IP2. The reason is that IP2 is an infinitival complement clause, with the infinitival verb *to be*; since the INFL head of IP2 thus carries neither Tense nor AGR (see Unit 4), it cannot be the (proper) governor of the reflexive *himself*, which occurs as the Specifier of IP2. The element that exceptionally governs and assigns Accusative Case to the reflexive *himself*, in this case, is the verb *believe* of the main clause IP1. IP1, which contains the governor of *himself*, viz., the verb *believe*, as well as IP2 which contains *himself*, is thus the local domain for *himself*; and IP2 also contains the antecedent of *himself*, viz., the main-clause subject *Ram*. The reflexive *himself* is thus bound within its local domain IP1, and thus the sentence ( ), despite being an Exceptional Case-Marking structure, also conforms to Principle A of the Binding Theory.

Thus, we see that Principle A holds for pretty much all the reflexives in the sentences we have seen thus far. We now turn to other kinds of anaphors, and examine whether those conform to Principle A of the Binding Theory as well.

5.2.2 Reciprocals

The **reciprocal expressions**, also called simply **reciprocals**, in English are *each other* and *one another*. (There is another expression, *mutually*, which conveys the meaning of reciprocity, but since this is an adverb, it is not counted as an anaphor -- an anaphor must be a nominal expression, i.e., have the syntax of a NP.) They are illustrated by the following sentences:

(8) a. [IP <u>Ram and Ali</u>$_x$ [V respect] [<u>each other</u>$_x$/<u>one another</u>$_x$]]

b. [IP <u>The two participants</u>$_y$ are envious [P of] [<u>each other</u>$_y$/<u>one another</u>$_y$].]

c. [IP <u>The three countries</u>$_z$ might [V fight] [<u>one another</u>$_z$/??<u>each other</u>].]

In these sentences, the phrases *each other* and *one another* are reciprocals coindexed with *Ram and Ali* in (8a), *the two participants* in (8b), and *the three countries* in (8c), respectively: the latter lend their reference to, and are therefore the antecedents of, the respective reciprocal expressions in the three sentences. (When there are exactly two members in the antecedent of a reciprocal, the reciprocal can be either *each other* or *one another*; however, when there are more than two members in the antecedent, as in *the three countries* in (8c), the preferred reciprocal is *one another* rather than *each other*.) Note that the IP is the local domain for each of the three sentences, and it also contains the antecedent NP for each reciprocal expression. Reciprocals as anaphors are thus bound within their local domains, and conform to Principle A of the Binding Theory, just as reflexives do.

Now consider the contrast between the following sentences, one grammatical and the other ungrammatical:

(9) a. [IP2 <u>They</u>$_i$ [V expect]ed [IP2 <u>each other</u>$_i$ to win].]

b. *[IP1 <u>They</u>$_i$ expected [IP2 that [<u>each other</u>$_i$] [I would] win].]

The sentence (9a) is an Exceptional Case-Marking sentence, so the reciprocal *each other* in (9a) is exceptionally governed by the main-clause verb *expect*; the local domain for *each other* is therefore not IP2 but IP1. In the ungrammatical sentence (9b), however, the reciprocal *each other* is governed within the finite complement clause IP2 by the I (NFL), the modal auxiliary *would*, so the local domain for *each other* here is IP2; but there is no antecedent for *each other* within IP2, so here the reciprocal is not bound within its local domain. The sentence thus violates Principle A of the Binding Theory, and is therefore ungrammatical.

Reciprocals as anaphors thus also conform to Principle A of the Binding Theory.

5.2.3 Emphatic reflexives

Reflexives can be used in a special way in English, as **emphatic reflexives**. Emphatic reflexives almost trivially obey Principle A of the Binding Theory, since they simply serve to emphasize their antecedent and do not have the status of argument NPs in themselves. Examples are the following:

(10) a. [IP <u>Mary</u>$_x$ baked this bread <u>herself</u>$_x$.]

b. [IP1 I heard that [IP2 <u>the President</u> <u>himself</u> was present on that occasion].]

c. *[IP1 I heard that [IP2 the President <u>myself</u> was present on the occasion].]

d. [IP1 <u>I</u> <u>myself</u> heard that [IP2 the President was present on the occasion].]

In the sentence (10a), the emphatic reflexive *herself* is coindexed with and serves to emphasize *Mary*, the subject of its local domain IP. In the sentence (10b), the antecedent of the emphatic reflexive is *the President*, which is the subject of its local domain IP2. The sentence (10c) is unacceptable, because the antecedent of the emphatic reflexive *myself* is *I*, which occurs outside IP2, the local domain for the reflexive *myself*, causing a Principle A violation. Finally, the sentence (10d) is grammatical, with the emphatic reflexive *myself* occurring just after its ante

which is the subject of the local domain IP1 of the reflexive *myself*. We thus find that even emphatic reflexives conform to Principle A of the Binding Theory.

5.2.4 Anaphor binding

The binding of an anaphor within its local domain is a special subtype of binding called **argument binding** or **A-binding** -- this is because the antecedent of the anaphor is invariably an argument NP, usually a subject, direct or indirect object. A-binding is opposed to **non-argument binding** or **A'-binding** (read "A-bar binding"), which is the binding relationship between a moved Wh-expression and its trace since the Wh-expression moves to a non-argument position, the Specifier of a CP, which is not an argument position at all. The relationship between a raised or passivized NP and its (NP-)trace is also, like anaphor binding, a relationship of A-binding, since the raised or passivized NP comes to occupy a subject position, which is an argument position. Moreover, it is a happy finding that this kind of binding is also found to conform to Principle A -- thus a raised NP cannot "skip" an intermediate higher clause to move to the subject position of a still higher clause, without leaving an intermediate trace in some suitably vacant (argument) position, and under passivization a passivized subject NP cannot "skip" the subject position of its own clause to move directly to a still higher clause without leaving an intermediate trace in that subject position. We discuss NP-traces further in Section 5.4.2.

5.3 PRONOUNS

5.3.1 Deictic and anaphoric pronouns

We now discuss pronouns, which the Binding Theory subsumes under the (larger) set of "pronominals". The reference of pronouns can be of two kinds:

(i) **deictic reference**,
(ii) **anaphoric** reference.

Pronouns with **deictic reference**, or **deictic pronouns**, are pronouns that "point" at individuals in the speech situation itself (the term *deictic* is from Greek *deixis*, '(the act of) pointing'). Thus, the first- and second-person pronouns *I, we, thou, you* are deictic pronouns, because they refer, not to fixed individuals across all situations of speaking, but to the speaker, a set of individuals including the speaker, and the addressee or set of addressees, in the given speech situation. Similarly, if someone points to a particular individual and says,

(11)   *He* stole my money!

the reference of the pronoun *he* cannot be known unless we know whom the speaker is pointing at. Here, *he* is therefore a deictic pronoun. Contrast these with the use of pronouns in the following sentences:

(12)   a. $\underline{Harish_x}$ promised that [$_{IP}$ $\underline{he_x}$ would bring the books back today].
        b. $\underline{Mary_y}$ alleged that [$_{IP}$ Kim_z had hit $\underline{her_{y/*z}}$].
        c. $\underline{The\ children_k}$ like [$_{NP}$ $\underline{their_k}$ new teacher].

In each of these sentences, the pronoun takes its reference from a preceding antecedent NP: thus, in (12a), the antecedent of the pronoun *he* is *Harish*; in (12b), the antecedent of the pronoun *her* is *Mary* (and not *Kim* -- we shall soon see why); and in (12c), the antecedent of the possessive pronoun *their* is *the children*. These pronouns are (unlike the deictic pronouns earlier) examples of anaphora, and are

therefore pronouns of **anaphoric** reference, or **anaphoric pronouns**. Note, however, that *anaphoric pronouns* are not to be confused with *anaphors* -- thus, reflexives and reciprocals are anaphors, not anaphoric pronouns; whereas the pronouns in the three sentences we have just seen are anaphoric pronouns, not reflexives or reciprocals. It so happens that both deictic and anaphoric pronouns are regulated by Principle B of the Binding Theory, as we shall shortly see.

5.3.2 Pronominal binding

Principle B of the Binding Theory (as we have seen in Section 5.1) says that a pronominal must be *free* in its local domain. We have already learned what the local domain of an anaphor or pronominal is. What Principle B says, in effect, is that a pronoun must NOT have any antecedent within its local domain. To see whether this is true of deictic pronouns, note the contrast between the pairs of sentences (13a,a'), (13b,b'), and (13c,c'):

> (13)   a. I_x hurt $\underline{him}_y$.
>
>   a'.   *I_x hurt $\underline{me}_x$.   (Note: *I hurt myself* is grammatical)
>
>   b. You_z despise $\underline{me}_x$.
>
>   b'.   *You_z despise $\underline{you}_z$.   (Note: *You despise yourself* is grammatical)
>
>   c. Ram_y saw $\underline{me}_x$ in the mirror.
>
>   c'.   *Ram_y saw $\underline{him}_y$ in the mirror.
>
>   (Note: *Ram saw himself in the mirror* is grammatical)

The sentences (13a'), (13b'), and (13c') are not acceptable sentences, because in each of these the object pronoun (*me*, the direct object *you*, or *him*) has an antecedent -- the subject -- within the same (simple) clause, its local domain, and thus these sentences violate Principle B of the Binding Theory. However, the pronoun is allowed to have its antecedent OUTSIDE its local domain within the same sentence. This is true of the anaphoric pronouns we have seen earlier, for instance:

> (14)   a.   [$_{IP1}$ $\underline{Harish}_x$ promised that [$_{IP2}$ $\underline{he}_x$ would bring the books back today].]
>
>   b.   [$_{IP1}$ $\underline{Mary}_y$ alleged that [$_{IP2}$ Kim_z had hit $\underline{her}_{y/*z}$].]
>
>   c.   [$_{IP}$ $\underline{The\ children}_k$ like [$_{NP}$ $\underline{their}_k$ new teacher].]

In the sentence (14a), the local domain for the anaphoric pronoun *he* is the finite complement clause IP2, since IP2 contains the pronoun *he* as well as tensed INFL, the governor of *he*. However, the antecedent of *he*, viz., *Harish*, is not within this local domain but outside it, in the main clause IP1. The pronoun is thus not bound within IP2, its local domain, and therefore conforms to Principle B. Similarly, in the sentence (14b), the local domain for the object pronoun *her* is the finite complement clause IP2, since IP2 contains *her* and the verb *hit*, the governor of *her*. The antecedent of *her*, viz., *Mary*, is not within IP2 but outside it (in IP1), and thus the pronoun *her* is free in its local domain IP2. This pronoun, too, therefore conforms to Principle B. We can now see why *Kim* cannot be the antecedent of the pronoun *her* (even if *Kim* is a woman's name). The reason is that *Kim* occurs within IP2, the local domain of the pronoun *her*, and so if *Kim* is the antecedent of *her* there is a Principle B violation. In the sentence (14c), the local domain for the possessive pronoun *their* is the NP *their new teacher*, because here (as a "special" case) the pronoun *their* is "governed" by the possessed (head) N *teacher*, and so the NP *their new teacher* contains the pronoun *their* as well as its governor. The antecedent of *their*, however, is *the children*, which occurs outside the NP *their children*; the possessive pronoun *their* thus also conforms to Principle B of the Binding Theory.

In the case of deictic pronouns, since there is no antecedent NP for a deictic pronoun anywhere in the sentence there is no question of any Principle B violation -- the deictic pronoun is then trivially free -- i.e., not bound -- within its local domain. A moment's reflection on the deictic pronouns that we have seen earlier will confirm this. Thus, deictic pronouns also conform to Principle B of the Binding Theory.

Something similar to pronominal binding is also observed for a very important kind of empty category, viz., **PRO** (see Unit 3), which occurs in sentences such as the following:

(15) a. $[_{IP1}$ I$_X$ want $[_{IP2}$ PRO$_X$ to go home].]

b. $[_{IP1}$ Sita$_i$ persuaded Ram$_j$ $[_{IP2}$ PRO*$_i$/$_j$ to change his$_j$ mind].]

c. $[_{IP1}$ $[_{IP2}$ PRO To err] is human.]

d. $[_{IF}$ $[_{NP}$ PRO Telling lies] is not advisable.]

The empty category PRO is different from pronominals, however, in that it is said to have a controller rather than an antecedent, but is similar in that sometimes it does not have any (antecedent or) controller NP within the sentence (as in the case of deictic pronouns). Thus, in the sentences (15a) and (15b), PRO has a controller -- I and $Sita$, respectively -- but in the sentences (15c) and (15d) it has no controller. However, PRO also differs from both pronominals and anaphors in that it is ungoverned -- it has no governor, and therefore no local domain, either. Note that, because PRO is an empty category, it does not need to be assigned Case; thus, it does not need a governor, and indeed must not have one. When it does occur, however, the controller of PRO occurs outside the minimal IP, as in (15a) and (15b), much as in the case of the antecedent of a pronoun.

5.4   OTHER BOUND ELEMENTS

5.4.1   Pro-drop: the empty category *pro*

Besides PRO, there is another kind of empty category that can have an antecedent. This is the empty category *pro*, which occurs in imperative sentences and other sentences like the following:

(16) a. Close the door !

b. Hope everything is fine with you.

c. (X: "What did Ram do?") Y: "Sold off all his books."

Note that these sentences are all atypical English sentences in that they lack an overt subject, even though it is clear from the context who the understood subject is. Since the subject of a finite clause is in a governed position (with INFL as the governor), the empty category PRO cannot occur in this position. Therefore, there must be some other kind of empty category occupying the subject position of the main clause in all of these sentences. Generative syntacticians have named this empty category *pro* -- an understood but unpronounced empty category that occurs in governed positions. In Standard Western English, *pro* occurs exclusively in the position of the subject of a finite clause. Furthermore, *pro* is also BOUND by the AGR element of INFL. The element *pro* is thus somewhat exceptional, in that it is both governed and bound by agreement-carrying (i.e., finite) INFL. The sentences (16a), (16b), and (16c), above, are thus underlyingly as follows:

(17) a. $[_{IP}$ pro$_{2sg/pl}$ AGR$_{2sg/pl}$ Close the door]!

b. $[_{IP1}$ pro$_{1sg}$ AGR$_{1sg}$ Hope $[_{IP2}$ everything is fine with you].]

c.   (A: "What did $Ram_{x,3sg}$ do?")

B: "[$pro_{x,3sg}$ [INFL PAST $AGR_{x,3sg}$] sell off all his_x books]."

The subscripts with *pro* and *AGR* in each sentence reflect that *pro* is coindexed with AGR in accordance with the number and person features of the understood subject. It turns out that *pro*, unlike PRO, cannot occur in ungoverned positions or positions that are not Case-marked. However, *pro* is like an overt pronoun in that it cannot have an antecedent within its local domain. Note that, in the three sentences we have just seen, *pro* occurs as the subject of the main clause, without any antecedent in the same clause (although in the short dialogue in (16c), *pro* has a discourse antecedent, *Ram*).

5.4.2   The empty category *NP-trace*

In Section 5.2.4, we mentioned that the binding of an **NP-trace** by its antecedent NP is, like anaphor binding, a kind of A-binding (i.e., "argument binding", so called because the antecedent NP has moved to an argument position). To see how this works, let us consider the following examples:
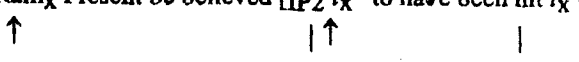
(18)   *D-structure:*   [$_{IP1}$ __ Present seem [$_{IP2}$[infin] <u>Ram</u> to be tired]]

NP-Movement (Raising)

S-structure: [$_{IP1}$ Ram_x Present seem [$_{IP2}$ t_x to be tired]]
Surface
structure: Ram seems to be tired.

(19)   *D-structure:*   [$_{IP}$ __ Past be hit <u>Ram</u> by a stone]

NP-Movement (Passive)

S-structure: [$_{IP}$ Ram_y Past be hit t_y by a stone]
Surface
structure: Ram was hit by a stone.

In these derivations, we see that a NP has to be raised or passivized precisely because it is ungoverned, and hence unable to get Case, in its D-structure position, and there is a vacant position available for it to move to, WITHIN the minimal finite clause, IP1 or IP. Assuming that the governor of the vacant position to which the NP moves can also serve as the governor of its trace, the local domain for the NP-trace in each sentence is the finite clause IP1 or IP, as the case may be; since this contains the antecedent of the NP-trace, this trace is bound within its local domain, thereby conforming to Principle A. The only special assumption that needs to be made is that the governor of the antecedent of an NP-trace also governs the NP-trace. The antecedent NP and its trace are said to form a link of **a chain**. A chain of this kind can have more than one link, as in the following example:

(20)   *S-structure:* [$_{IP1}$$Ram_x$ Present be believed [$_{IP2}$ t_x' to have been hit t_x by a stone]

NP-Movement (Passive)   NP-Movement (Passive)

Surface
structure(PF): Ram is believed to have been hit by a stone.

In this example, there are two links in the chain between the antecedent Ram_x and its original trace t_x, with the intermediate trace t_x' serving as the antecedent that A-

binds the original trace t_X; the intermediate trace t_X' is, in turn, an NP-trace A-bound by the antecedent NP *Ram*. The left-hand (and final) link of the chain obeys Principle A of the Binding Theory, since the local domain for the intermediate trace (under the special assumption made regarding its governor) is the main (finite) clause IP1. This makes sense, since the NP should not have to move any further beyond the local domain in order to find a governor and hence Case-assigner for itself.

5.5   CONCLUSION

The three Principles of the Binding Theory lead to the four-way classification of anaphors, pronominals, lexical NPs, and the empty categories PRO, *pro*, NP-trace, and Wh-trace according to the binary features [+anaphoric], [-anaphoric], [+pronominal], and [-pronominal]. The classification is shown in the following table:

Table 5.1: Four-way classification of overt NPs and empty categories

	+anaphoric	-anaphoric
+pronominal	PRO	pronouns *pro*
-pronominal	anaphors NP-traces	lexical NPs Wh-traces

Note that PRO is the only kind of element that is [+anaphoric, +pronominal]. This is because PRO does not need to be bound within any local domain, but can nonetheless have an antecedent. Wh-traces are also bound, but they are A'-bound, and A'-binding does not conform to either Principle A or Principle B of the Binding Theory. This is why Wh-traces are classified with lexical NPs as being [-anaphoric, -pronominal].

5.6   LET US SUM UP

1.   Anaphors, pronominals, referential expressions, and empty categories are subject to the three Principles of the Binding Theory.
2.   Anaphors include reflexives, reciprocals, and emphatic reflexives.
3.   Pronominals include deictic and anaphoric pronouns (which are distinct from anaphors).
4.   Referential expressions include proper names such as *Sita* and lexical noun phrases such as *the little boy who is standing on the steps.*
5.   Principle A of the Binding Theory says that an anaphor must be bound in its local domain.
6.   Principle B of the Binding Theory says that a pronominal must be free in its local domain.
7.   Principle C of the Binding Theory says that a referential expression must be free (everywhere).
8.   The empty category NP-trace conforms to Principle A of the Binding Theory, and is thus subject to anaphor binding.
9.   The empty category *pro* conforms to Principle B of the Binding Theory, and is thus subject to pronominal binding.
10.   Wh-traces, not being A-bound at all in a local domain or otherwise, are subject to Principle C of the Binding Theory.

11. The empty category PRO, being ungoverned, is not subject to the Binding Theory at all, but to Control Theory, another component of the theory of grammar.
12. Anaphors, pronominals, referential expressions, and other bound elements (including empty categories) can be classified according to the binary features [+anaphoric] and [+pronominal].

5.7 KEY WORDS

A-binding: The binding of an anaphoric expression by an antecedent that is in an argument position in the S-structure representation of a sentence. Thus, NP-traces are A-bound by their antecedents. By contrast, the binding of a Wh-trace by its antecedent Wh-expression is an instance of A'-binding ("A-bar binding"), since the (moved) antecedent Wh-expression in the Specifier of CP is not in an argument position

anaphor: A reflexive or emphatic reflexive such as *herself*, or a reciprocal expression such as *each other*, which must necessarily get its reference from some other NP close to it within the same sentence. An anaphor is subject to Principle A of the Binding Theory.

anaphora: Any one of the set of expressions in a given language that may or must derive their reference from some other NP, within the same sentence or in the broader discourse (e.g., a story or a conversation) to which the sentence belongs. Anaphors, pronouns of anaphoric reference, and VP-substitutes such as *so do* and *do so* are all examples of anaphora.

anaphor binding: Binding in accordance with Principle A of the Binding Theory. In addition to anaphors, NP-traces are also bound by their antecedents in this way

anaphoric pronoun: A pronoun that does not have deictic reference and is not an expletive pronoun (like expletive *it* or *there*), but takes its reference from an antecedent within the same sentence or elsewhere

binding: The coreference between anaphora and their antecedents; the antecedent is said to *bind* the anaphora, and the relationship of coreference is indicated by coindexation of the antecedent and the anaphora.

Binding Theory: An important modular sub-theory within the Government-Binding Theory (later the Principles-and-Parameters Theory) of generative grammar, the Binding Theory regulates the distributions of anaphors, pronominals, and lexical NPs ("referential expressions" or "R-expressions") in relation to potential or actual antecedents in sentences.

5.8   BIBLIOGRAPHY

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5.9   QUESTIONS & EXERCISES

1.   The pronoun *it* is usually included in the set of personal pronouns in English. Can this pronoun have deictic reference? Can it have anaphoric reference? Is it possible for *it* to have   neither deictic nor anaphoric reference but some other syntactic function altogether?

2.   State in terms of the Binding Theory why the following coindexing relations cannot hold in the sentences given below:

   a. She_x loves $Sita_x$.
   b. $Sita_x$ thinks that Ram_y wants PRO_x to go home.
   c. Ram_i believes that $Harish_j$ hurt $himself_i$ by accident.

   Suggest alternative indices that would yield acceptable readings for these sentences.

3.   There is an important syntactic concept that lies at the basis of both Case Theory and Binding Theory. Can you identify this concept? Explain it in your own words, with examples if necessary.

NOTES ON "QUESTIONS & EXERCISES"

1.   The pronoun *it* can have deictic reference in only very restricted, limited contexts, e.g. in *I am scared of -- it!* (accompanied by pointing at the relevant real or imagined object). The pronoun *it* can have anaphoric reference, which it most commonly does. Expletive *it* -- as in *It is very hot today* -- does not have either deictic or anaphoric reference.

2.   a.   This pattern of coindexation violates Principle C, since the R-expression *Sita* is not free here.
   b.   PRO has to be coindexed with its closest possible controller, here *Ram*. (Strictly speaking, this is not within the purview of the Binding Theory, but of Control Theory.)
   c.   The reflexive *himself* has to be bound within its local domain (according to Principle B of the Binding Theory), and must therefore be coindexed with *Harish*, not with *Ram*.

3.   The concept of *government*, or of a *governor*. Note that a governor is a Case-assigner, and is also essential for the identification of a local domain in the Binding Theory.

deictic pronoun: A pronoun whose reference is obtained from some entity or set of entities present in the speech situation itself, often accompanied by pointing at that entity or set of entities; a deictic pronoun is thus different from an ANAPHORIC PRONOUN (q.v.), in that it does not have an overtly mentioned antecedent.

governor: A head that minimally c-commands and Case-marks an argument NP is said to be the *governor* of that NP, and its relationship with that NP is a relationship of *government*. Since every pronounced argument NP must be Case-marked, it follows that every pronounced argument NP must have a governor. See also LOCAL DOMAIN below.

local domain: The local domain for an argument NP is defined as necessarily containing the NP and its governor, and only optionally an antecedent for the NP. See also GOVERNOR above.

PRO: An ungoverned, unpronounced but meaningful "empty category" that is subject to Control Theory; in sentences in which it has a controller, the controller is usually found to occur outside the minimal IP containing the PRO element.

***pro*:** An unpronounced but understood "empty category" that is governed under coindexation by AGR and occurs in certain specific syntactic contexts, e.g., as the subject of an imperative sentence or in a sentence such as *(pro) Hope you are doing well*.

pronominal: A pronoun of anaphoric reference, it is subject to Principle B of the Binding Theory.

pronominal binding: The binding of an expression such as a pronoun or the empty category *pro* subject to Principle B of the Binding Theory.

R-expression:
(referential expression) A NP that refers to some entity or set of entities on its own, a lexical NP, an R-expression is subject to Principle C of the Binding Theory; in these respects, it is different from an anaphor or a pronominal.

sloppy identity: Identity of sense, i.e., of general meaning, without reference to the same entity (or set of entities), e.g., the relationship that holds between the expressions *little boy* and *one* in the conjoined noun phrase *this little boy and that <u>one</u>* : note that the two expressions refer to two distinct little boys.

strict identity: Identity of reference, e.g., the relationship between the expressions *the Morning Star* and *the Evening Star*: both refer to the same entity, i.e., the planet Venus.

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(1)   Everyone in this room knows two languages.

This is straightforward enough as a sentence. Yet when we think a little more about how to interpret it, we realize that it can be interpreted in two different ways. Supposing there are four individuals, W, X, Y, and Z sitting in a room. There is a set of languages, say Assamese, Bhotia, Chattisgarhi, Dutch, and English, that are spoken in areas that W, X, Y, and Z come from. Then the sentence (1) can mean either of two things, something like (2a) or something like (2b):

(2)   a.   W knows Chattisgarhi and English, X knows Assamese and Dutch, Y knows Bhotia and Chattisgarhi, and Z knows Bhotia and Dutch.

        b.   W, X, Y, and Z all know Bhotia and English.

These two interpretations of the sentence (1) can be expressed in more general terms as follows:

(3)   a.   For every person x in this room, there are two languages y and z, such that x knows y, z.

        b.   There are two languages a and b such that, for every person x in this room, x knows a and b.

These two interpretations of (1) arise out of the difference in the relative domains of applicability of the two expressions *everyone* and *two languages*: for the reading (3a), we say that *everyone* has wider (or higher) **scope** than *two languages*, whereas we say that for the reading (3b), *two languages* has wider (or higher) scope than *everyone*. Note that, by itself, *everyone* (i.e., all the people in this room) is quite unambiguous in its meaning, and similarly, we find the meaning of *two languages* all by itself quite straightforward.

6.1.2   The notion of "Logical Form" or "LF"

Generative grammar has undergone many revisions and extensions since its original version -- transformational generative grammar -- was put forward by Noam Chomsky in his 1957 book *Syntactic Structures*. Chomsky gave fuller shape to his theory of transformational grammar in his 1965 book *Aspects of the Theory of Syntax*; this theory came to be known as the Standard Theory of transformational grammar. During the late 1960s and early 1970s, however, Chomsky and a number of other generative grammarians proposed certain further revisions and extensions, some of which had to do with the role of meaning in generative grammar. Matters such as differences in scope demanded an adequately explanatory account within the framework of generative grammar, and as a result the idea of a separate level of semantic interpretation -- i.e., interpretation of meaning -- besides the levels of deep and surface structure gained further ground within the theory of generative grammar. This led to the postulation of a level of meaning-interpretation that was originally named **Logical Form** and subsequently came to be called simply **LF**, over and above deep structure and surface structure. The different levels of representation for sentences in a language came to be structured as follows, in what came to be known as the Revised Extended Standard Theory or the **Theory of Government and Binding**, later called the **Principles-and-Parameters Theory**:

(4)   D-Structure (originally Deep Structure) ←   Lexicon
                                       ↓
                              S-Structure
                              /   \
       Logical Form (LF)   Phonetic Form (PF)
                                (originally Surface Structure)