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LING2777 – Syntactic Theory

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Final Paper

I.   Introduction

There are an infinite number of ways that a speaker can use language to establish a

relationship. Different classes of words or phrases exist to perform referential functions: nouns,

pronouns, and anaphors. Binding Theory is the set of concepts that are the "syntactic restrictions

on where different NP (Noun Phrases) types can appear in a sentence." (Carnie, 2021) This

allows for a theoretical approach to understanding how languages restrict the placement of words

of different types.

This paper will discuss binding theory in two languages, Japanese and Persian, not thought to

be related. There is an interesting connection concerning the Binding Theory between the two.

Japanese has a class of words/morphemes that could be considered pronouns or anaphors.

Similarly, Persian has words that are not definitively an anaphor or pronoun, but this is only

formal written Persian.

II.   Background

        a.   Theoretical Background

As previously stated, Binding Theory is the set of principles that govern the placement of NPs in

a sentence. The NPs that are of question fall into three categories:

- Anaphors: an NP that must receive meaning (referent) within the same sentence.

  - Reflexive Pronouns: anaphors that refer to an entity pronominally, e.g., "himself."

  - Reciprocal: anaphors that indicate a relationship to entities, e.g., "each other"

- Pronouns: an NP that *can* receive their referent within the same sentence but does not have to, e.g., "them," "she"

- R-expressions: an NP that received meaning from something existing in the world (outside of the sentence); e.g., "red car," "small brown dog."

For each of these categories, languages have restrictions on where NPs can be located to receive meaning. The manner by which we reflect NPs receiving meaning is coindexing. An index is a subscript marker that shows what an NP refers to. Two NPs that share an index are coindexed.

Apart from semantic relationship (two NPs referring to the same object in the world.) There are structural considerations for reference. The first is "c-command." In a tree structure, Node A c-commands node B is every node that dominates A also dominates B, and neither A nor B dominate each other. (Carnie, 2021). This structure is demonstrated below in Figure 1.
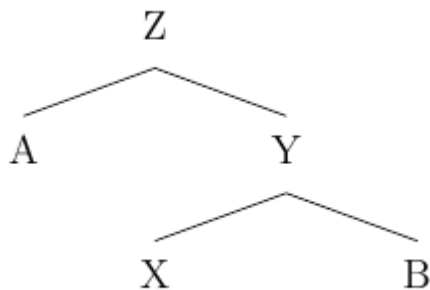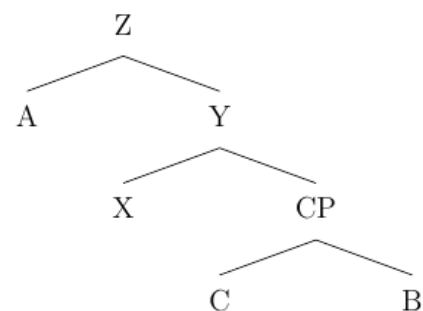

Figure 1. A c-commands B

Figure 2. A c-commands B, but B is not in the binding domain of A.

When working with syntax, the concept of binding domain is important. For the scope of this paper, the binding domain is the clause in which the NP that c-commands the others are located. This means that an embedded CP would intervene and be of a different binding domain.

The definition of binding is based off of these principles: an NP (A) binds another NP (B) if, and only if, A c-commands B and A and B are co-indexed (Carnie, 2021). Two NPs can be co-index but without the c-command structure, they cannot be bound. Symmetrically, a node can (and usually does) c-command many other nodes, but if they are not coindexed to reflect coreference, then they will not be bound.

Chomsky has delivered a critical work (Chomsky, 1993) formulating these and research has brought us to the following Binding Principles (Carnie, 2021)

A. An anaphor must be bound in its binding domain.

B. A pronoun must be free in its binding domain.

C. An R-expression must be free everywhere.

These principles will be discussed in the languages concerned.

b. Language Background

Japanese is in the Japonic language family, whose relation to other languages is contested, with no mainstream consensus. There are over 100 million native Japanese speakers, with most speakers living in Japan(International, 2013). Japanese is an SOV language (International, 2013). Japanese has multiple morphemes related to binding that could be considered anaphors or pronouns. (Carnie, 2021; Li, 2017) This will be the basis of one of the analyses here.

Persian is an Iranian language, and it is on the Indo-Iranian branch of the Indo-European language family. It is also known as Farsi (or Parsi). Most commonly spoken in Central Asia, there are approximately 100 million speakers (70 million native)(International, 2013). Persian is spoken in many countries, lending to variability. Here, we will consider the difference between the use of a reflexive pronoun (an anchor) in spoken and written Persian. Persian is also an SOV (International, 2013) language, but will be SV(SOV) when a clause is embedded.

III.   Data and Theory

    a. Japanese

Consider the following sentence in Japanese:

a) Kazuko-wa$_i$ [$_{CP}$[$_{TP}$ Taroo-ga$_k$ zibunzisin-o$_{k/*i}$ hihansita][$_C$ to]]   itta

    Kazuko   Taroo   zibunzisin   criticized   that   said

    "Kazuko said that Taroo$_k$ criticized himself$_k$."

    "*Kazuko said that Taroo criticized herself$_i$."

If we consider that structure of this sentence, shown in Figure 3, we see that it follows the Principles of Binding: as an anaphor, "zibunzisino" must be bound in its binding domain. The DP "Tarooga" c-commands the morpheme in question, "zibunzisino$_k$" and both are co-indexed with k. As reflected in the grammaticality, "zibunzisino" cannot refer to "Kazukowa" because that would violate Principle A of the Binding theory because "zibunzisino" is in an embedded clause and, therefore, not in the binding domain of "Kazuko." This piece of Japanese data fits the theory.

However, now consider the following Japanese sentence:

b) Kazuko-wa$_i$ [$_{CP}$ [$_{TP}$ zibunzisin-ga$_i$ Taroo-o korosita]   [$_C$ to]]   omotteiru.

| Kazuko | zibunzisin | Taroo | killed | that | think |

"Kazuko thinks that herself killed Taroo." (grammatical phrasing in Japanese).

Now we see that "zibunzisinga" *must* refer to "Kazuko." The DP "Kazukowa" still c-commands "zibunzisinga", and is co co-indexed, as shown in Figure 4. However, we would still think of "zibunzisinga" as being outside of the binding domain of the DP "Kazukowa." This conflict will be resolved in the following section.
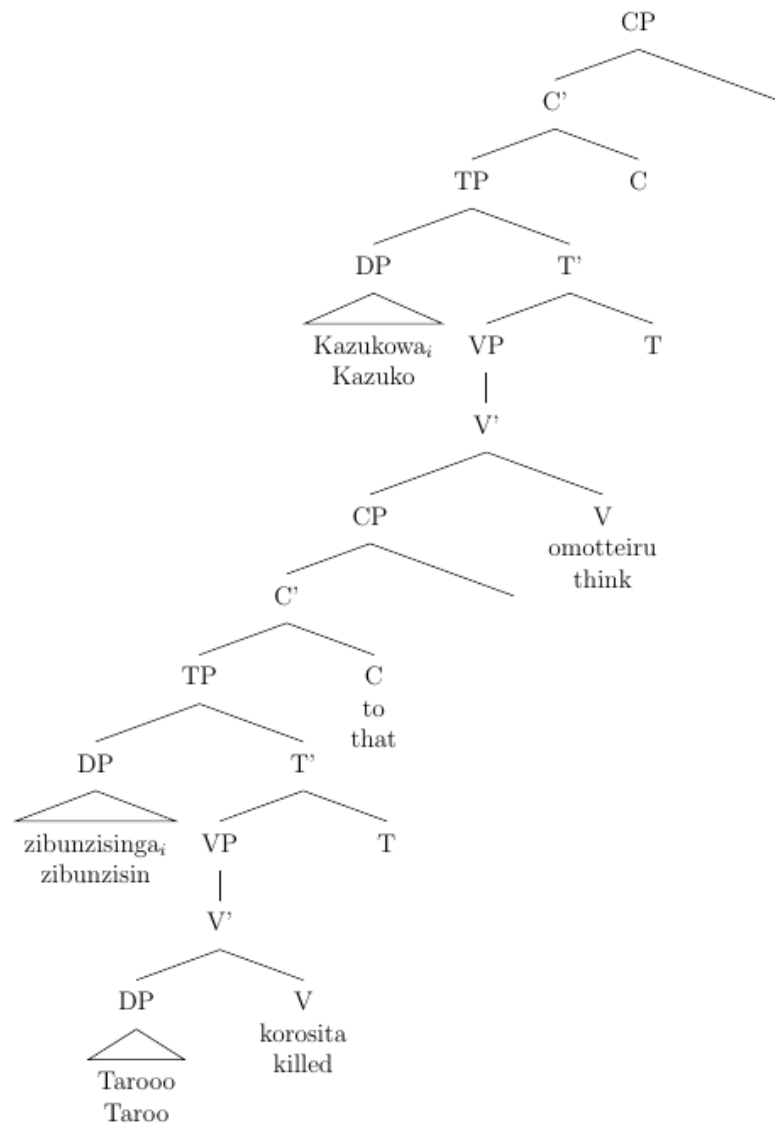

Figure 3. Tree for (b). Note that now "zibunzisin" c-commands Tarooo and both are c-commanded by Kazukowa.
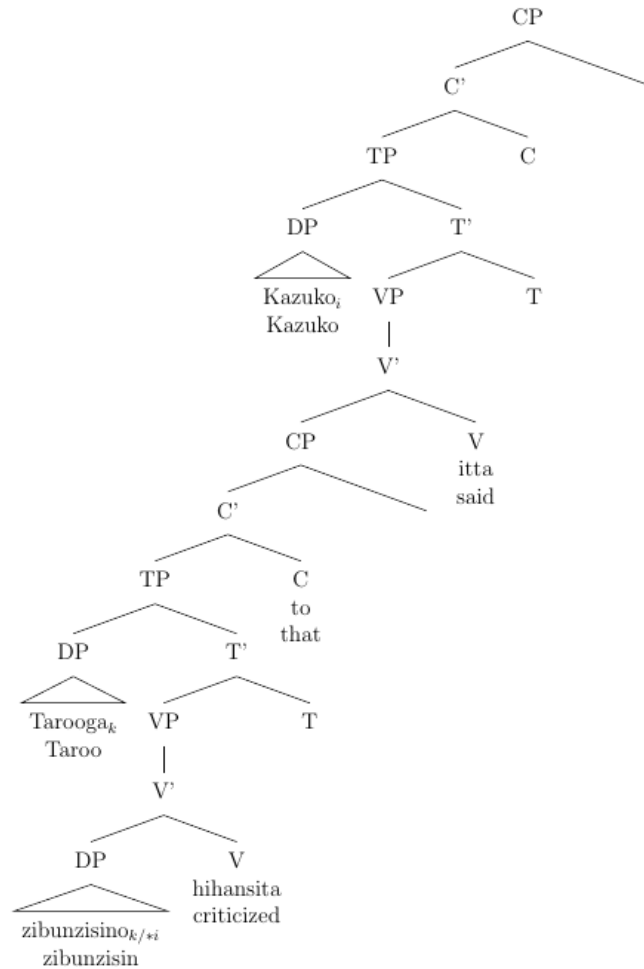
Figure 4. Tree for (a). Note that "Tarooga" c-commands zibunzisin. Both are c-commanded by Kazuko

b. Persian

Consider these sentences in Persian:

c) Mery$_i$ goft [$_C$ ke [$_{TP}$ Jan$_k$ ketab-a ro be xodesh$_{i/k}$ bargardune]]

    Mary said that John book-PL ra to himself/herself return

    "Mary said that John (should) return the books to him/herself."

d) Mery$_i$ goft [$_{CP}$ ke [$_{TP}$ Jan$_k$ ketab-a ro be xodesh$_{i/k}$ barmigardune]]

| Mary | said | that | Jan | book-PL | ra | to | himself/herself | return.3SG.FUT |

"Mary said that John will return the books to him/herself."

("ra" is the definite article "the")

Here we see "xodesh" does not appear to align with either an anaphor or pronoun: if we use the *k* index, "xodesh" is bound outside of its binding domain, violating Principole A. (The tree below shows that "Mery" c-commands "xodesh", so if it is co-indexed, then it is bound.) We would expect an anphor to be bound inside of its binding domain. If we use the *i* index, then we treat it as a pronoun, but hen viotates principle B, because pronouns must be free in their binding domain. (Again, the tree below shows that "Jan" c-commands "xodesh, so if we use this co-indexing, then "xodesh" is bound.) We will reconcile this in the next section.
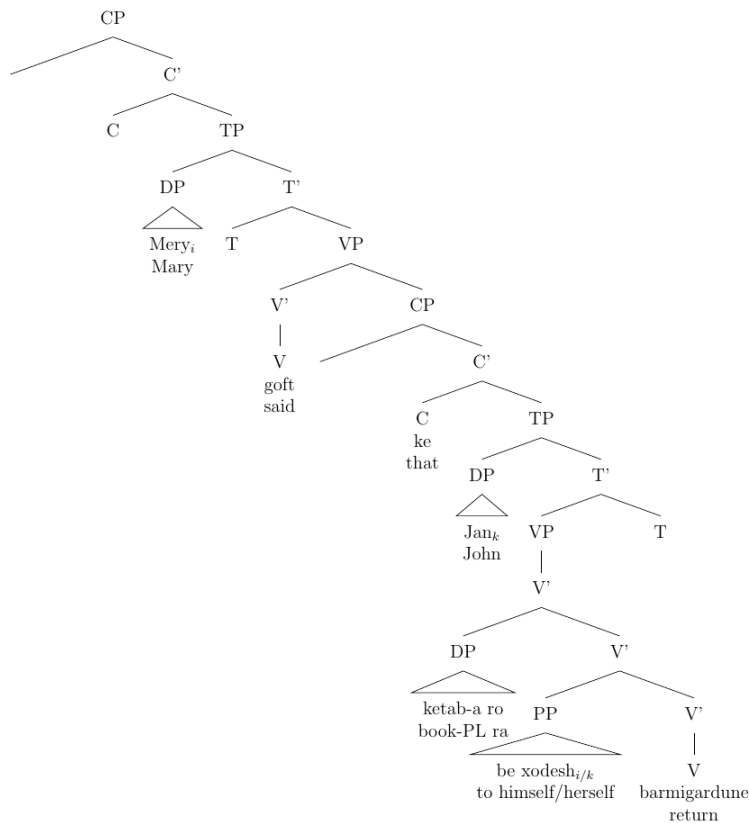

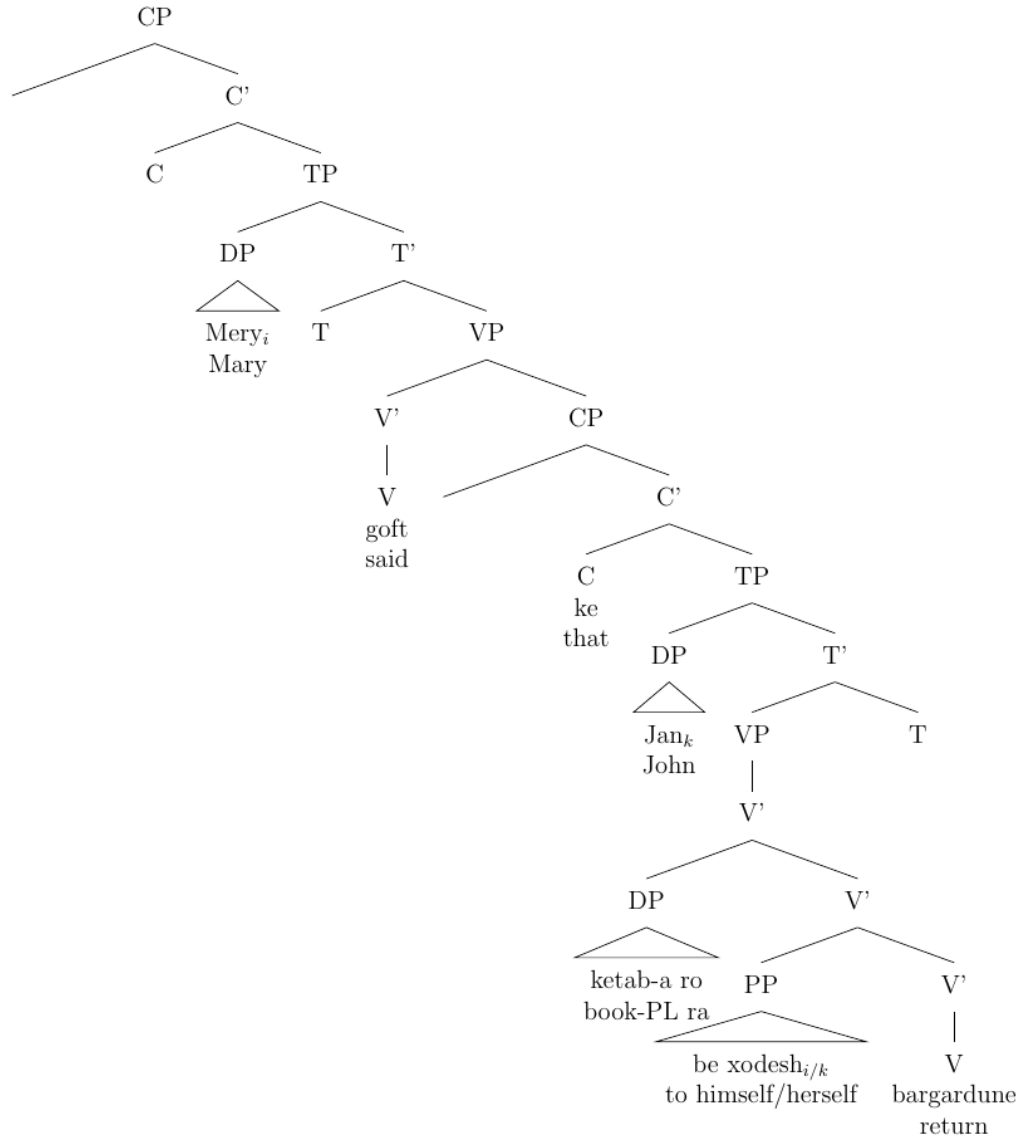*Figure 5. The tree for (c). Note both "Mery" and "Jan" can be coindexed grammatically with "xodesh".*

CP
C'
C TP
DP T'
Mery$_i$
Mary
T VP
V'
V
goft
said
CP
C'
C
ke
that
TP
DP T'
Jan$_k$ VP T
John
V'
DP V'
ketab-a ro PP V'
book-PL ra
be xodesh$_{i/k}$ V
to himself/herself bargardune
return

Figure 6. Tree for (d). Notice structural similarities to (c).

IV.   Reconciliation

a.   Japanese

Recall that in the Japanese data (a) "zibunzisin" acts as an anohpor, and in (b) as a pronoun.
To explain this consider the morphology of the NPs. It has already been estatblished that c-
ccomand is a requirement for "zibunzisin" to be bound (Li, 2017). Then, utilizing information

from Carnie (2021) we know that NPs with the "-wa" suffix c-command any other NP, and NPs with the suffic "-ga" c-command any NP with the suffix "-o". Recalling the morpholofy of (a) and (b)

a) Kazuko-wa$_i$ [$_{CP}$[$_{TP}$ Taroo-ga$_k$ zibunzisin-o$_{k/*i}$ hihansita][$_C$ to]]   itta

b) Kazuko-wa$_i$ [$_{CP}$ [$_{TP}$ zibunzisin-ga$_i$ Tarooo korosita]   [$_C$ to]]   omotteiru.

We see this hierarchy imposed: in (a) "Kazuko-wa" cannot be c-indexed with "zibunzisin" because that would make "zibunzisin" bound outside of its binding domain, a violation of Principle A. And in (b) "Kazuko" can be co-indexed with "zibunzisin" because "zibunzisin" will be free in its binding domain. This supports the conclusion that "zibunzisin" can act as both a pronoun and an anaphor, with morphological marking acting allowing speakers to interpret.

The benefit of the modification of this theory is that it better explain the distribution of "zibunzisin": by showing that, in Japanese, the morphological markers indicate c-command, which then allows us to determine what indexing is allowed, shows that "zibunzisin" can acts as either a pronoun or an anaphor, when in the proper c-commanding positions, as marked by suffixes.

b. Persian

To reconcile the Persian data, consider the following, which was taken from formal *written* text, as opposed to (c) and (d), whish are from normal speech:

e) Jan$_i$ goft [$_{CP}$ ke [$_{TP}$ Mery$_k$ keta ra baraye xod$_{*i/k}$ bexanad]]

John said that Mary book ra for self read.3SG

"John said that Mary should read the book to *himself/herself."

This sentence indicates that without the "-esh" suffix, "xod" behaves as we would expect an anaphor to: in order to be gramatically coindexed, it the index must be in the bdining domain, as "Mery" is in this case. Therefor, in speech, "-esh" must be changing the meaning or interpretation of "xodesh."

In Persian, "-esh" is the 3rd person singular pronoun, and the morpheme "xod" is the reflexive morpheme menaing self. (E Abdollahnejad, 2017) What we see in in (c) and (d) that is resovled with (e) is that in Persian speech, it is grammatical to allow "xodesh" to be a bound eith in or out of the binding dominain, in accordacne with principals A and B of the Binding Theory respectively. This is because the "xodesh" is composed of the mopheemes "self-him/her" meaning that is a a combination of the two. This offers speakers flexibility when speaking, that is not presented in wriiting. The benefits of the modification of this data is that a morhmeic analsys of "xodesh" shows that it is not a single that is either an anaphor or a pronoun, but rather a combination of the two, which is why it appears to be abel to act as both.

V.   Conclusion

Binding Theory is the set of principles that dicate where in a sentence it is grammatical to allwo two different NPs to be bound. Binding is a combination of coindexation (coreference) and structural restrictions (c-command). The Binding Principles set forth by Chomsky (1993) and instantiated here by Carnie (2021) are thought to govern the binding phenomena. Different langauges have different proporties and interactions with the Binding Theory. In this paper we saw that both Japanese and Persian have NPs that can act as both pronouns an anaphors. By demonstrating the morphologial properties, we see that the Binding Thoery makes the correct prediction when accounting for affixiation (Japenese "-wa","-ga", "-o" strucutres, and Persian "xod-esh" dual role.)

When we consider these solutions, it is important to note that they are morpholigical in nature. While the Binding Theory does indeed hold, it is not feasible to generalize the reconciliations posited here corss-linguistically. Indeed, morphological processes like on the anaphors shown here can be highly variable, if not arbitray. What was done here was a reconciliations of two phenomena that showed that the Binding Theory still holds.

Future research would then naturally be apprriately focused on other morhological processes in binding. Particualrly with the 'self' morphomes shown in Persian and Japanese. Further, understanding the synatax and binding of these self morphese will be critial too. The Binding Theory holds here, and makes predictions. These predictions can be tested with more cross-linguistic analyses.

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