Knowledge of Language

Required reading: Chs. 1 and 4.1 of *Aspects*

1   Some Central Questions

• How are we able to comprehend a potentially infinite number of novel sentences? The problem of *discrete infinity*.

• What does linguistic knowledge consist of? We know things that we were never taught. How did this knowledge arise? Specifically, how do children succeed in acquiring language on the basis of an input that is underspecified and impoverished?

• How do we account for 'language universals'?

2   Implicit Knowledge

2.1   Errors and Non-errors in Child Language

Yes-No Question Formation

(1) a. Has John eaten a cake?
         (John has eaten a cake.)

   b. Will Lila come to the party?
       (Lila will come to the party.)

Any number of rules can be devised to derive the interrogative Y/N questions from their declarative counterparts.

(2) a. Swap the first two words around

   b. Swap the first verb with the first noun phrase

   c. Swap the subject and the verbal element after it

Test Cases:

(3) a. The man has eaten a cake.

   b. The woman who is singing is happy.

   c. The book that John is reading is on sale.

While child language differs in interesting ways from the target adult language, errors of the sort predicted by (2a, b) are never made by children (see Crain and Nakayama (1987), Crain and Lillo-Martin (1999), and Legate and Yang (2002)). This suggests that children are predisposed towards postulating rules of a particular kind.

2.2 Pronominal Reference: a case of implicit knowledge

We have judgements about whether *he/him/his* can refer to *John* in the following suite of examples. This is an instance of implicit knowledge - we know whether in a certain instance a pronoun can refer to a name without knowing why this is so. I have deliberately left the judgements unspecified below.

(4) a. John likes him.
b. He likes John.
c. He likes him.

(5) a. Liina introduced John to him.
b. Liina introduced him to John.
c. Liina introduced him to him.

(6) a. 1. John likes his brother.
2. He likes John's brother.
3. He likes his brother.

b. 1. John's brother likes him.
2. His brother likes John.
3. His brother likes him.

(7) a. 1. Liina introduced John's (long lost) sister to him.
2. Liina introduced his (long lost) sister to John.
3. Liina introduced his (long lost) sister to him.

b. 1. Liina introduced John to his (long lost) sister.
2. Liina introduced him to John's (long lost) sister.
3. Liina introduced him to his (long lost) sister.

(8) a. John thinks that he is smart.
b. He thinks that John is smart.
c. He thinks that he is smart.

(9) a. 1. John thinks that Hafdis believes that he is smart.
2. He thinks that Hafdis believes that John is smart.
3. He thinks that Hafdis believes that he is smart.

b. 1. John thinks that he believes that Hafdis is smart.
2. He thinks that John believes that Hafdis is smart.
3. He thinks that he believes that Hafdis is smart.

c. 1. Hafdis thinks that John believes that he is smart.
2. Hafdis thinks that he believes that John is smart.
3. Hafdis thinks that he believes that he is smart.

(10) a. 1. The fact that Liina admires John pleases him.
2. The fact that Liina admires him pleases John.
3. The fact that Liina admires him pleases him.

b. 1. John is pleased by the fact that Chunghye admires him.
2. He is pleased by the fact that Chunghye admires John.
3. He is pleased by the fact that Chunghye admires him.

(11) a. 1. Liina gave a book to the boy who admires her.
2. She gave a book to the boy who admires Liina.
3. She gave a book to the boy who admires her.

b. 1. The boy who admires Liina gave a book to her.
2. The boy who admires her gave a book to Liina.
3. The boy who admires her gave a book to her.

(12) a. 1. When John left the room, he was smiling.
2. When he left the room, John was smiling.
3. When he left the room, he was smiling.

    b. 1. John was smiling when he left the room.
       2. He was smiling when John left the room.
       3. He was smiling when he left the room.

Structure plays an important role in determining pronominal coreference. Recognizing structure allows the formulation of c-command, which is a relationship between nodes in a tree structure.

Tools for discovering structure: Tests for Constituency

3 Movement

Movement is a popular diagnostic for constituency. The claim is that if a group of words can undergo *movement* i.e. preposing, postposing, or fronting for question formation, they constitute a phrase of some sort.[1] More explicitly, if a sequence of words $w_i \ldots w_j$ can permuted in the manner indicated below while keeping the thematic roles constant, then we claim that $w_i \ldots w_j$ form a unit i.e. a constituent.

(13)   a. initial:
$$w_1 \ldots w_{i-1} w_i \ldots w_j w_{j+1} \ldots w_n$$

    b. after preposing:
$$w_i \ldots w_j w_1 \ldots w_{i-1} w_{j+1} \ldots w_n$$

3.1 Preposing

Constituents can often be preposed. Non-constituents can never be preposed.

Noun Phrase (NP) preposing:

(14)   a. I can't stand your younger brother.

    b. [Your younger brother], I can't stand [---] (though your elder brother's OK).

    c. * Your younger, I can't stand [--- brother].

    d. * Younger brother, I can't stand [your ---].

    e. * Brother, I can't stand [your younger ---].

    f. * Your, I can't stand [--- younger brother].

    g. * Your brother, I can't stand [--- younger ---].

Prepositional Phrase preposing:

(15)   a. Peter gave a book to your brother.

    b. [To your brother], Peter gave a book [---] (but not to mine).

    c. * To your , Peter gave a book [--- brother].

    d. * To, Peter gave a book [--- your brother].

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[1]Remember that the reverse is not always true i.e. if something cannot be moved around, it does not mean that it is not a constituent. There could be independent reasons for why it cannot move around.

    e.   [Your brother], Peter gave a book [to ___] (but not to mine).

    f.   * Your, Peter gave a book [to ___ brother].

    g.   * To brother, Peter gave a book [___ your ___].

Why is (15e) ok?

Preposing of Adjective Phrases and Verb Phrases is more restricted but still possible.

(16)   a. Bill said that the new Almodovar was exciting and [very exciting], it was [$_{AP}$ ___]. (Adjective Phrase)

       b. [Give in to blackmail], I never will [$_{VP}$ ___]. (Verb Phrase)

       c. Patrick said that he would win the prize, and [win the prize], he did [$_{VP}$ ___]. (Verb Phrase)

(17)   a. They said that Bill would read the book somewhere, and [read the book] he *did* in the library.

       b. They said that Bill would read the book in the library, and read the book in the library he *did*.

Tensed VPs (and VPs + modals) cannot be preposed.

(18)   a. John ate the apple.

       b. * [Ate the apple], John.

       c. Kelly must visit the doctor.

       d. * Must visit the doctor, Kelly.

Adverbial phrases can be preposed much more freely.

(19)   a. She's going to be leaving for Poughkeepsie [very shortly].

       b. [Very shortly], she's going to be leaving for Poughkeepsie [$_{AdvP}$ ___].

3.2 Postposing

Only constituents can be postposed. Typically this test is only applicable to NP objects.

(20)   a. He explained [all of the terrible problems that he had encountered] to her.

       b. He explained [$_{NP}$ ___] to her [all of the terrible problems that he had encountered].

       c. * He explained [$_{NP}$ all of ___] to her the terrible problems that he had encountered.

       d. * He explained [$_{NP}$ all ___] to her of the terrible problems that he had encountered.

3.3 Questions

If it is possible to ask a question about a set of consecutive words in a sentence, they form a constituent.

(21)   a. He gave a book to Michael hurriedly.

       b. Who gave a book to Michael hurriedly?

       c. Who did he give a book [$_{PP}$ to [$_{NP}$ ___]] hurriedly?

       d. How did he give a book to Michael [$_{AdvP}$ ___]?

       e. To whom did he give a book [$_{PP}$ ___] hurriedly?

       f. What did he give [$_{NP}$ ___] to Michael hurriedly?

       g. What did he do [$_{VP}$ ___] ?

3.4 Interpreting the Movement Tests

(22) Schematic form of the Movement Test:

    a. initial:

$$w_1 \ldots w_{i-1} w_i \ldots w_j w_{j+1} \ldots w_n$$

    b. after preposing:

$$w_i \ldots w_j w_1 \ldots w_{i-1} w_{j+1} \ldots w_n$$

The conclusion that $w_i \ldots w_j$ forms a constituent is based on a number of assumptions, which are outlined below.

(23) Background Assumptions for Movement Rules:

    a. Only constituents can be targeted by movement.

    b. The target of movement can only accommodate one constituent.

According to (23a), a movement rule cannot take arbitrary elements (i.e. elements that do not form a constituent) and move them together as a unit, creating a new constituent in the process. This is an aspect of our derivational calculus that will be crosslinguistically invariant. It is a fact about our derivational process and not about any particular language.

(23b), on the other hand, is something that may or may not be true in a language. It happens to be true in English and in German (for the Vorfeld, the 'first' position) but not for example in Hindi-Urdu. If the language does not impose the relevant constraint, then we cannot conclude that the moved sequence forms a single constituent. It is quite possible that the moved sequence consists of a bunch of constituents. So from the fact that (24b) is grammatical, we cannot conclude that the sequence *Tina-ko kitaab* forms a constituent.

(24) a. Mina-ne Tina-ko kitaab dii
       Mina-Erg Tina-Dat book.f give.Pfv.f

       'Mina gave Tina a/the book.'

    b. Tina-ko kitaab Mina-ne dii
       Tina-Dat book.f Mina-Erg give.Pfv.f

       'Mina gave Tina a/the book.'
       (literally: *to Tina a book Mina gave)

The moral here is that before you start applying constituency tests used for one language in another language, it is important to check if the assumptions that the tests rely on, in fact, hold in the new language under consideration.

Another point that I would like to emphasize is that the failure of the movement test does not by itself tell us all that much about constituency. Consider the fact that in English, we can't move much out of a DP.

(25) a. I would like to read [John's new book].

    b. *John's, I would like to read new book.

    c. *New book, I would like read John's.

From this we should not conclude anything about the constituency of *new book* or *John's*, which would almost trivially be a constituent under certain assumptions. There are other properties of DPs and the overall syntax of English which block such extractions. In other languages such the Balkan Slavic languages and Hindi-Urdu, such extractions are grammatical.

(26) a. John-kii   mẼ nayii kitaab paṛh-naa caah-taa   hũ:
     John-Gen.f I   new.f book.f read-Inf want-Hab.MSg be.Prs.1Sg

     'I want to read John's new book.'
     (Literally: John's, I want to read new book.)

   b. nayii kitaab mẼ John-kii   paṛh-naa caah-taa   hũ:
     new.f book.f I   John-Gen.f read-Inf want-Hab.MSg be.Prs.1Sg

     'I want to read John's new book.'
     (Literally: new book, I want to read John's.)

4   Adverbs

If adverbs can be positioned inside a constituent, it is either an S or a VP, and not an NP or a PP.

If S-adverbs such as *certainly, obviously* etc. can be positioned inside a constituent, it is an S. If VP-adverbs such as *completely* can be positioned inside a constituent, it is a VP.

(27) a. Possible positions for S-adverbs like *certainly*
     [$_S$ * The team * can * [$_{VP}$ rely on my support]$_{VP}$ *]$_S$

   b. Possible positions for VP-adverbs like *completely*
     [$_S$ The team can * [$_{VP}$ rely * [$_{PP}$ on my support]$_{PP}$ *]$_{VP}$]$_S$

This test relies on two assumptions.

The first one is a fairly basic assumption - modifiers must be attached to the constituent they are modifying. We take this assumption to be crosslinguistically valid.

The second assumption is language specific - for the test to work, it must be the case that parts of the DP/PP cannot move out the DP/PP and over the adverb.

In languages where the second assumption does not hold, adverbs can seemingly appear DP-internally. We have already seen that in Hindi-Urdu genitive possessors can move out of the DP - this property of Hindi-Urdu is enough to make the adverb positioning test useless.

(28) a. Mona **aksar** [Billu-kii   kitaabẽ] chupaa de-tii   hai
     Mona.f often Billu-Gen.f books.f hide   GIVE-Hab.f be.Prs.Sg

     'Mona often hides Billu's books.'

   b. Mona Billu-kii   **aksar** kitaabẽ chupaa de-tii   hai
     Mona Bill-Gen.f often books.f hide   GIVE-Hab.f be.Prs.Sg

     'Mona often hides Billu's books.'

5   Sentence fragments

Only phrasal constituents i.e. full phrases can serve as serve as sentence fragments (in an appropriate context).

(29) a. A: Where did he go?
       B1: Up the hill
       B2: *Up hill
       B3: He went up the hill

   b. A: Where are you going to?
       B1: To the cinema

B2: The cinema

B3: I am going to the cinema

c. A: Who were you ringing up?
B1: My sister
B2: *Up my sister
B3: I was ringing up my sister.

Up my sister in (29c) is not a possible sentence fragment because *up* and *my sister* do not form a constituent in 'I was ringing up my sister'. This is in contrast with 'I am going to the cinema' where *to* and *the cinema* do form a constituent.

6 Coordination

6.1 Straightforward Cases

Only constituents can be coordinated.

(30) a. He has [$_{NP}$ a cat] and [$_{NP}$ a dog].

b. I met your [$_N$ mother] and [$_N$ father].

c. Is she [$_{PP}$ in the kitchen] or [$_{PP}$ in the bathroom]?

d. He speaks [$_{AdvP}$ very slowly] but [$_{AdvP}$ very articulately].

e. [$_S$ Wynona likes Maui] and [$_S$ Kelly likes Cancun].

f. * John rang *up his mother* and *up his sister*.

Only identical constituents can be coordinated.

(31) a. John wrote *to Mary* and *to Fred*. (= PP and PP)

b. John wrote *a letter* and *a postcard*. (= NP and NP)

c. * John wrote *to Mary* and *a letter*. (= PP and NP)

d. * John wrote *a letter* and *to Fred*. (= NP and PP)

In general co-ordination is a pretty free operation but there are certain cases where co-ordination is blocked. These are typically cases where the material being co-ordinated needs phonological adjacency with a certain element and co-ordination destroys the required adjacency.

(32) CPs in Hindi-Urdu cannot stand by themselves:

a. *...V [CP and CP]

*Varun jaan-taa hai [ki tum yahā: ho] aur [ki mẼ vahā:
Varun.m know-Hab.MSg be.Prs.Sg that you here be.Prs.2Sg and that I there
hũ:]
be.Prs.1Sg

'Varun knows that you are here and that I am there.'

b. ... V [C [IP and IP]]

Varun jaan-taa hai [ki [[tum yahā: ho] aur [mẼ vahā:
Varun.m know-Hab.MSg be.Prs.Sg that you here be.Prs.2Sg and I there
hũ:]]]
be.Prs.1Sg

'Varun knows that you are here and that I am there.'

6.2 More Complex Cases of Coordination

These cases raise the question of exactly what is being co-ordinated.

• Right Node Raising:

(33)   a. John walked and Bill ran [*up the hill*].

        b. Tamara denied but Fred admitted [*complicity in the crime*].

        c. Kelly must, and Jason may, [*go to the party*].

The italicized sequence in the sentences in (33) is shared between the two conjuncts. Therefore this is sometimes also called 'Shared Constituent Co-ordination'.

Only constituents can be shared.

(34)   *Martha rang and Paul picked *up Martin's sister*.

• Gapping:

(35)   a. Mona peels potatoes and Bill cucumbers.

        b. Jonas invited Mina last month and Tina last year.

The analysis of these cases involves co-ordination plus an additional reduction operation, which is typically either movement or ellipsis.

The existence of Right Node Raising and Gapping means that the application of the co-ordination test requires some care. In some cases, deciding between whether something is an instance of Right Node Raising/Gapping or an instance of regular coordination comes to our overall assumptions.

7 Ellipsis

Under certain discourse conditions, it is possible to omit certain parts of a sentence. This phenomenon is known as Ellipsis.

(36)   A: Jay won't *wash the dishes*.
B: I bet he will (wash the dishes) if you're nice to him.
(the bracketed words need not be pronounced)

Typically, in English, only VPs can undergo Ellipsis (i.e. be omitted)

(37)   a. Vivian won't put soda water into scotch, but her brother will put soda water into scotch.

        b. * Vivian won't put soda water into scotch, but her brother will put soda water into (scotch).

        c. * Vivian won't put soda water into scotch, but her brother will put soda water (into scotch).

        d. * Vivian won't put soda water into scotch, but her brother will put (soda water into scotch).

        e. Vivian won't put soda water into scotch, but her brother will (put soda water into scotch).

(38)   a. Nola will read a book in the park at 5pm and Nick will read a book in the park at 5pm, too.

b. Nola will read a book in the park at 5pm and Nick will _{read a book in the park} at 6pm.

c. Nola will read a book in the park at 5pm and Nick will _{read a book} in the orchard at 6pm.

d. ???/*Nola will read a book in the park at 5pm and Nick will _{read} a poem in the orchard at 6pm.

8 Replaceability

If a sequence of words can be replaced by another sequence of words which you know forms a constituent, then the original sequence also forms a constituent.

So suppose you know that *eat the apple* is a Verb Phrase, then you can show that *drink scotch* is also a verb phrase by a simple replacement test.

(39) Mimi didn't [drink scotch]   →   Mimi didn't [eat the apple].

8.1 Proforms

The replacement test can be used more generally with help of words which can stand for full phrases. These are words like *him, it, so, as, which* etc. These words are called proforms - to generalize over pronouns (actually pro-NPs), pro-VPs, pro-APs etc.

If we can replace a sequence of words by a pro-XP, then we can claim that the sequence is an XP.

Pronouns, (*him, her, it*), replace NPs and not Ns.

(40) a. A: What do you think of the woman who wrote that incredibly pretentious book on shamanistic chants?
B: I can't stand *her*.

b. * What do you think of the *her* who wrote that incredibly pretentious *it* on shamanistic *it*?

there functions as pro-PP.

(41) A: Have you ever been to Paris?
B: No, I have never been *there*.

so, as, which function as pro-VPs.

(42) a. John might [$_{VP}$ go home], and *so* might Bill.

b. John might [$_{VP}$ resign his post], *as* might Bill.

c. If John can [$_{VP}$ speak French fluently] - *which* we all know he can - why is he so shy with the French?

do so is another pro-VP.

(43) a. Bill [**read the book**] in the library, and Mary *did so* (in the museum).

b. Bill [**fixed the faucet**] with a screwdriver in fifteen minutes with great difficulty, and Mary *did so* (with a hammer) (in twenty minutes) (with no problem at all).

(44) the boldfaced sequence is the (intended) antecedent for *do so*.

a. Maia [**gave a present to me**] yesterday and Sally *did so* the day before yesterday.

b. *Maia [**gave a present** to me], and Mary *did so* to my brother.

c. Maia [**put some money on the table**] yesterday and Sally *did so* the day before yesterday.

d. *Maia [**put some money** on the table], and Mary *did so* on the shelf.

e. Maia [**gave Mary a book**] yesterday, and Sally *did so* the day before yesterday.

f. *Maia [**gave Mary** a book], and Sally *did so* a magazine.

so can also replace APs i.e. it is a pro-AP also.

(45) Many people consider John [$_{AP}$ extremely rude], but I've never found him *so*.

Similarly *it* can be a pro-S also. However *it* can only occur in NP positions.

(46) a. A: Mary has finished her assignment.
          B: I don't believe it. (I don't believe that Mary has finished her assignment)

      b. A: I believe that John will won.
          B: * I hope it. (I hope that John will win)

Note that all the proforms that we have discussed so far replace phrases and not word-level constituent.

Most likely, the proform test is not a purely syntactic test. The proform might impose both syntactic and semantic restrictions. So certain cases where the proform test fails could be cases where the syntactic restrictions are met but where the semantic restrictions are not. Quite often though, the two requirements coincide.

8.2   Words used as phrases

Consider the following sentence:

(47) Cats can be useful.

Is *Cats* in (47) an NP or an N or both?
We know that *cats* is a Noun. Is it also an NP?
Similarly is *useful* just an A or is it an AP also?
We can show that *cats* is also an NP and that *useful* is also an AP.
For one thing, they can be replaced by the relevant proforms.

(48) a. Cats can be useful, but *they* can also be dangerous.

      b. Cats can be useful, but I have never found them *so*.

Also *cats* can be replaced by phrases which we are sure are noun phrases.

(49) Those brown cats can be very useful.

cats can be coordinated with NPs.

(50) Cats and other mice hunting animals can be very useful.

These facts suggest that words can function as phrases. The absence of extra words should not lead us to conclude that something is just a word-level category.

References

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