

# Lec11: Constituent Structure / Verbs

HUL 242

22/2

## Linguistic analysis

necessarily a meta analysis i.e. using language to talk about language.

When we analyze linguistic phenomena, we use our knowledge to sift whether a certain utterance is possible or not.

## Linguistic analysis

But where does this knowledge come from- ?

It is based on our ability to use that language i.e. English, Hindi, Tagalog etc.

-We can provide **grammaticality judgements** for certain phenomena.

This also implies that it's hard to carry out syntactic analysis unless you know the language- OR if you have an informant who knows it well.

(usually the case when linguists want to analyze previously unstudied languages)

But where does this knowledge come from- ?

Therefore, when we want to do such an analysis, we want to be able to ask the right questions

(e.g. imagine eliciting data from your informant for an unknown language).

We would like to ask questions in the right way- irrespective of the language we're working in.

## Test for a subsequence

When we want to test for constituency, we will carry out a substitute/move/question/focus operation.

Hence, in the case of sentences such as

mere dost mujhe [meri file] pahunchaa rahe the

## Substitution

mere dost mujhe [meri file] pahunchaa rahe the

mere dost mujhe [PRN] pahunchaa rahe the

## Question

mere dost mujhe [meri college ki certificates ki file] pahunchaa  
rahe the

mujhe kya pahunchaa rahe the?  
meri college ki certificates ki file  
\*meri college ki

## Fronting

[meri college ki certificates ki file] mere dost mujhe pahunchaa  
rahe the

\*meri college ki mere dost mujhe certificate ki file pahunchaa rahe  
the



## Focusing

baat yah hai ki [meri college ki certificates ki file] mere dost mujhe pahunchaa rahe hai

\*baat yah hai ki [meri college ki ] mere dost mujhe certificates ki file pahunchaa rahe hai

## Co-ordination

Both co-ordinated constituents are NPs

mere dost mujhe [meri file] aur [mere certificates] pahunchaa rahe  
the

It is possible to co-ordinate constituents that are of the same type  
(i.e. noun phrases, verb phrases, adj phrases)

## What about the VP?

mere dost mujhe meri file pahunchaa rahe the

### VP ellipsis

mere dost mujhe [meri file pahunchaa rahe the] aur mere bhai ki  
[\*] bhi

The entire verb phrase is dropped or elided

## In English

Adverb cannot intervene inside the verb phrase

My friends often sent the file

My friends sent the file often

\*My friends sent often the file

# Constituent Structure

## Why bother with constituent structure?

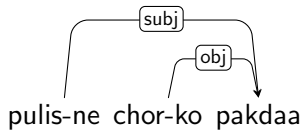
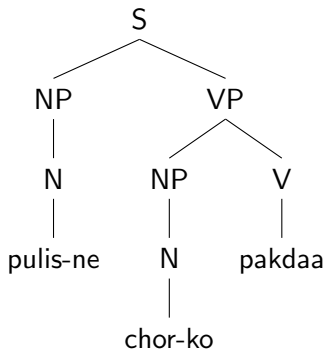
VP is the main reason

The initial division (binary) into NP and VP in a constituent structure distinguishes it from a relational (dependency) representation

## Hindi

pulis ne chor ko pakdaa

## Phrase structure and Dependency



## Phrase Structure (PS) and Dependency Structure (DS)

PS captures the hierarchical constituent structure using terminals and non-terminals

DS captures grammatical relations between the verb, its subject and object

So it is universal?

Some free-word order languages fail VP tests- e.g. Japanese, some VSO languages, Australian languages etc.

Constituency is a linguistic claim- and it is one that's central to most Chomskyan theories.

In most NLP applications, dependency representation is *de rigueur* conversion between the two is also commonly carried out using head-percolation tables

## Importance of the verb

- VP-or verb is a crucial deciding factor: tells us more about the way the sentence will be structured
- Presence of verbs is a universal property of all languages
- Verbs are the engine of a sentence



## Verbs

An important property: the argument-taking capacity of the verb

*melt* is a one-place predicate i.e. requires only one argument

*know*, *write* are two-place predicates i.e. require two arguments

### Predicates and Valency

Predicate=lexical item that can combine with argument(s)

Valency=number of arguments it requires

## Verbs

Valency :

Intransitive	1	ronaa, haMsnaa
Transitive	2	karnaa, maarnaa
Ditransitive	3	denaa, bhejnaa

## Verbs

In a transitive verb, one usually requires a doer and a thing done  
E.g. mohan ne ladke ko maara.

These participants essential to complete the EVENT described by the verb

We actually simulate events in our brain when we hear a sentence  
E.g. Mary hammered a nail into the wall

Horizontal orientation of nail vs vertical orientation of wall

subjects respond more quickly to name the picture of a nail in a horizontal orientation after being primed with the sentence

## Optional vs Obligatory Arguments

when we think of an event, we are also well aware of its participants

Some participants are obligatorily present, others are not

E.g. ladke ne billi ko maara

(?)ladke ne maara

ladke ne [mohan ki lathi se] billi ko maara

[mohan ki lathi se] is not obligatory: extra information

ladka, billi= arguments

mohan ki lathi se= adjunct

## Argument types

Transitive verbs like *maar* need an NP object

But there are verbs like *kaha* which can also take an entire sentence as object

E.g. [mohan ne] sochaa [ki vaha ghar jaayegaa] (sentence)

In Ditransitive verbs like *denaa*, there is both a direct (DO) and indirect object (IO)

mohan ne suman ko kitaab dii/bhejii

kitaab-DO; suman ko- IO

## Argument types

Ditransitives can also take a clause (sentence) as an object OR another NP

mohan ne [suman ko] *bataaya* [ki vaha college nahi jaayegaa]  
(clause)

mohan ne [suman ko] [saari baatein] *bataayi*

## Subcategorization frames

VP [NP]	pighalna
VP [NP NP]	maarna
VP [NP S]	sochnaa
VP [NP NP S]	bataana

## Optionally transitive

Two uses of the verb *run*

I ran today

I ran the race

These are also known as object drop verbs- Examples in Hindi?

Usually treated as two different argument realizations



## Other restrictions

Semantic restrictions on realization of arguments

phool/(?)patthar murjhaaya

mohan/(?)building haMsaa

(?)patthar ne paani piyaa

Restrictions based on properties such as human/animacy/

Semantic indexing errors in the brain - (N400 effects)

## Subcategorization frames

VP [NP]	pighalna	(+animate (?))
VP [NP NP]	maarna	(+animate)
VP [NP S]	sochnaa	(+animate)
VP [NP NP S]	bataana	(+animate, +human)

## Alternations in Verbs

so-sulaa-sulvaa

khulnaa-kholnaa-khulvaana

katnaa-kaatnaa-katvaana

??-karnaa-karvaana

??-denaa-dilvaana

\*vah khulaa

vah soyaa

darvaaza khula, maine darvaaza khola

vah soya, maine use sulaaya