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Subject Extraction and Wh-interrogatives

Muralikrishnan, R.

Universität des Saarlandes

Contents

- Abstract and Introduction
- Analysis
- Motivation for a new feature
- How does it work
- Examples
- Discussion and Conclusion

Abstract and Introduction

Abstract

- The BMS(2001) HPSG analysis of Subject Extraction leaves the sentence with an unsaturated SUBJ list (Wh-interrogatives).
- We motivate the introduction of a new feature to address this issue.
- We show examples of how things work with the introduction of the new feature.

Introduction

- Extraction
- Types of Extraction
- HPSG Analysis of Extraction
- Pollard & Sag (1994 Ch.9) analysis
- Bouma, Malouf & Sag (2001) analysis
- Issue(s) to be addressed

Extraction…

- What is Extraction?
  - Extraction is a syntactic phenomenon, in which an overt constituent is in a non-argument position.
  - Such constructions are called Unbounded Dependency Constructions (UDCs).
  - In other words, a syntactic constituent having been 'extracted' out of its 'original' or usual position, occurs in another position.
  - The extracted constituent is called a *filler* that fills the *gap* or *trace* it left behind.

...Extraction

- Strong UDC → Overt constituent in non-argument position.
- Weak UDC → Constituent in argument position, but interpreted as co-referential with the trace.
- Examples of *filler-gap constructions* in English include:
  - Topicalisation
    - *Kim$_i$, Sandy loves* ____$_i$. (strong UDC)
  - Relative Clause
    - *This is the politician$_i$ who Sandy loves* ____$_i$. (strong UDC)
    - *This is the politician$_i$ Sandy loves* ____$_i$. (weak UDC)
  - It-Cleft
    - *It is Kim$_i$ who Sandy loves* ____$_i$. (strong UDC)
    - *It is Kim$_i$ Sandy loves* ____$_i$. (weak UDC)
  - Purpose-Infinitive
    - *I bought it$_i$ for Sandy to eat* ____$_i$. (weak UDC)

Types of Extraction

- Complement Extraction
  - *John$_i$, Mary adores ____$_i$.*
- Adjunct Extraction
  - *[For how many years]$_i$ does Kim think Mary has adored John ____$_i$?*
- Subject Extraction
  - *Who$_i$ does Kim think ____$_i$ adores John?*

This is an example of SE with a Wh-interrogative

HPSG Analysis of UDCs

- There are two approaches to analyse filler-gap dependencies in general.
  - Trace-based analysis
    - Assumes the presence of a trace element in the lexicon, which is phonetically empty.
      - Pollard & Sag (1994 Ch.4) analysis
  - Traceless analysis
    - No phonetically empty element in the lexicon.
      - Using Lexical Rules – P&S(1994 Ch.9)
      - Without using Lexical Rules – BMS(2001)

P&S (1994 Ch.9) Analysis

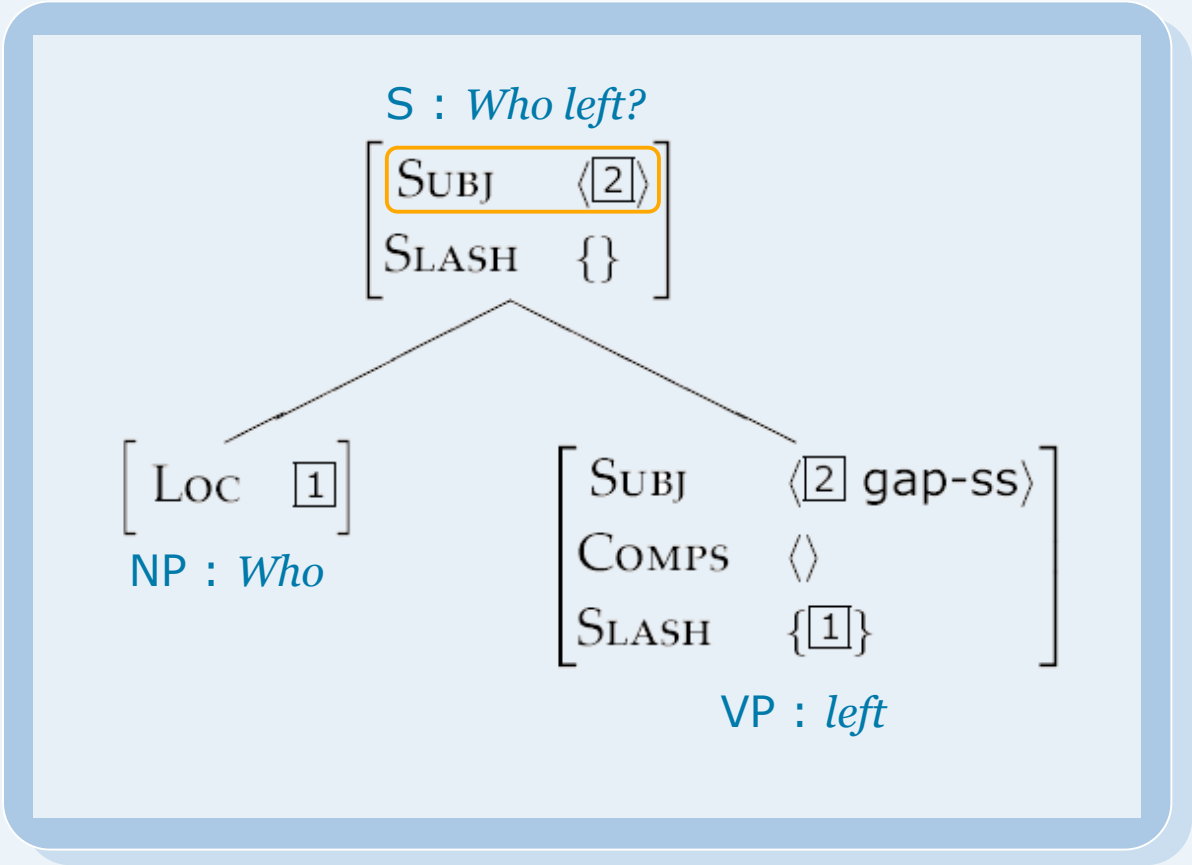
- Pollard & Sag provide a traceless analysis of UDCs using lexical rules.
- The lexical rules derive non-canonical lexical entries.
- The resulting lexical entries exhibit a mismatch between argument structure and valence.
- Non-UDC "subject in-situ" analysis of some sentences: -
  - *Who left?*
  - *Who adores John?*

BMS Analysis (2001)…

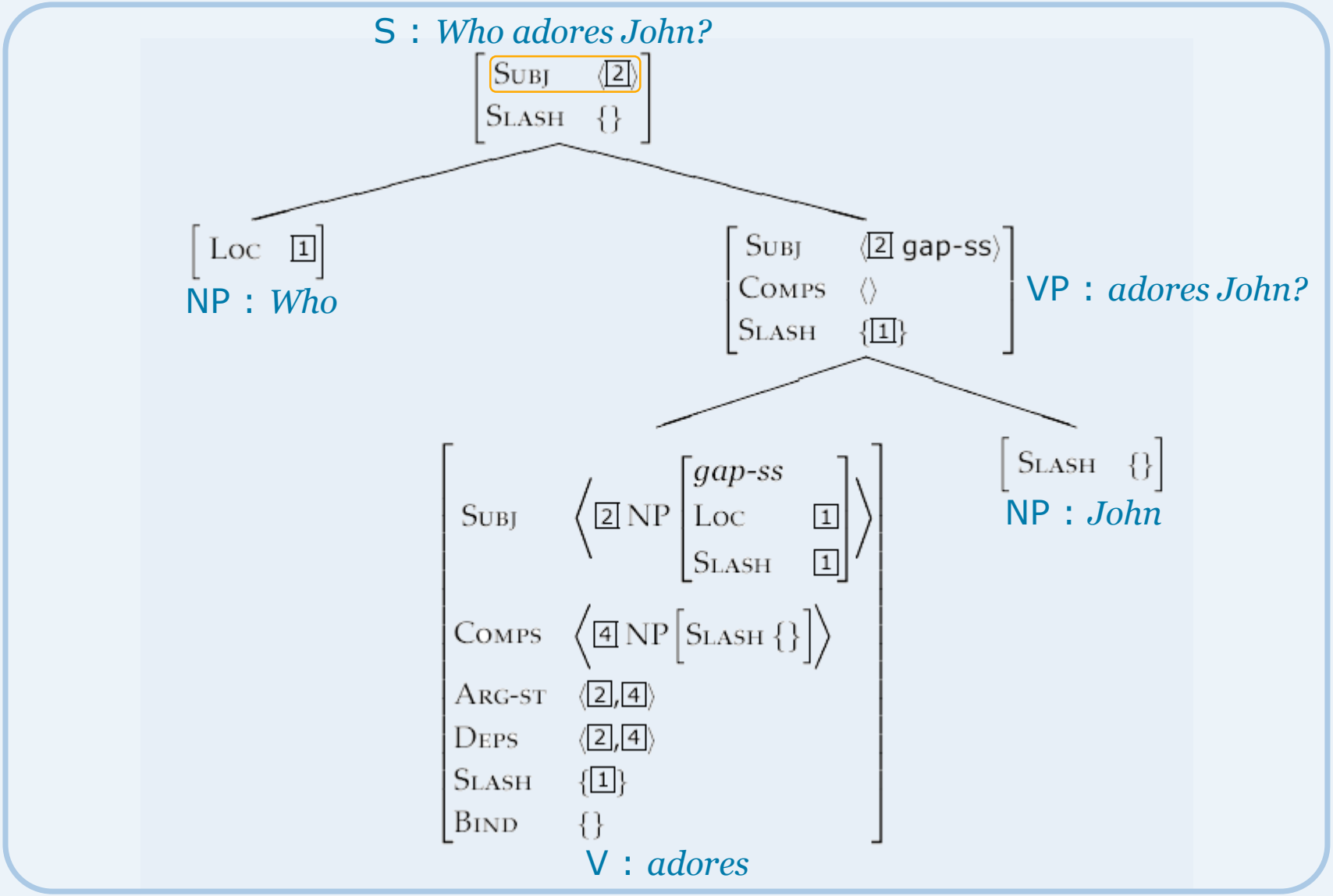
- BMS analysis of Extraction gets rid of lexical rules on following grounds: -
  - Lexical rules are a device primarily intended to account for morphological processes.
  - Extraction is located on the interface between the lexicon and the syntax, rather than in either one of these individually.
- BMS provide a uniform analysis of all kinds of Extraction.
- They also provide UDC analysis of all subject extraction.

…BMS Analysis (2001)…

- Examples
  - *Who*$_i$ ____$_i$ *left?*
  - *Who*$_i$ ____$_i$ *adores John?*



...BMS Analysis (2001)...



…BMS Analysis (2001)

- Observations: -
  - Wh-interrogatives that ‘fill’ a subject’s gap are not anymore treated as subjects but mere fillers.
  - Due to this, though the Slash is bound by the Local feature of the Wh-interrogative, the subject of the sentence is, in a sense, still missing.
  - Though the sub-categorisation frame of the verb seems not yet saturated, what we have are grammatical sentences.

Issue(s) to be addressed

- Unsaturated subject list at the sentence level.
- With the inventory of features and the machinery we have now, there is:
  - No way to saturate the *gap-ss* requirement at the sentence level, because all the lexical items are of type *canon-ss*.
  - No way to block P&S non-UDC analysis of the examples cited earlier.

Analysis

Analysis…

- There could be two ways in which one could approach the aforementioned issues.
  - Explicit specification of the hd-filler-ph to empty the *gap-ss* in the Subject list.
    - This is again leading us back to something like the Lexical Rules. So, this approach is not a neat and elegant one.
  - Lexical mechanism, i.e., enabling the lexicon (lexical item) to drive the hd-filler-phrase to bind the *gap-ss*.
    - This is the approach we take, since this is lexically motivated.

...Analysis

- For this, we have to analyse the following: -
  - Which are the lexical items that might have to be modified?
    - Wh-interrogatives!!! (Primarily).
  - What needs to be modified in these lexical entries?
    - We want to specify information in such a way that, when these lexical items act as fillers, the hd-filler-phrase does everything that it already does and in addition, binds the *gap-ss* requirement on the SUBJ list.

Motivation

New Feature SGBIND

- Based on this analysis, we motivate to introduce a new feature in lexical entries: SGBIND → subject-gap binding.
  - SGBIND will be of type *synsem*.
  - It will have a <*gap-ss*> in the lexical entries of Wh-interrogatives.
  - The phrase that selects these lexical entries will have a slashed SUBJ.
  - All other lexical entries would have an empty SGBIND.

Why a new feature?

- Can't we do it with the present inventory of features, such as BIND or EXTRA?
  - No.
  - A non-empty BIND is used for attributive adjectives like easy, tough etc., which select for an infinitival complement missing an NP. E.g.:- *John is easy to please*.
  - A non-empty EXTRA feature is used for sub-binding. E.g.:- *John is an easy man to please*.
  - Moreover, these are not of type *synsem*, which a SUBJ list is.

How does it work

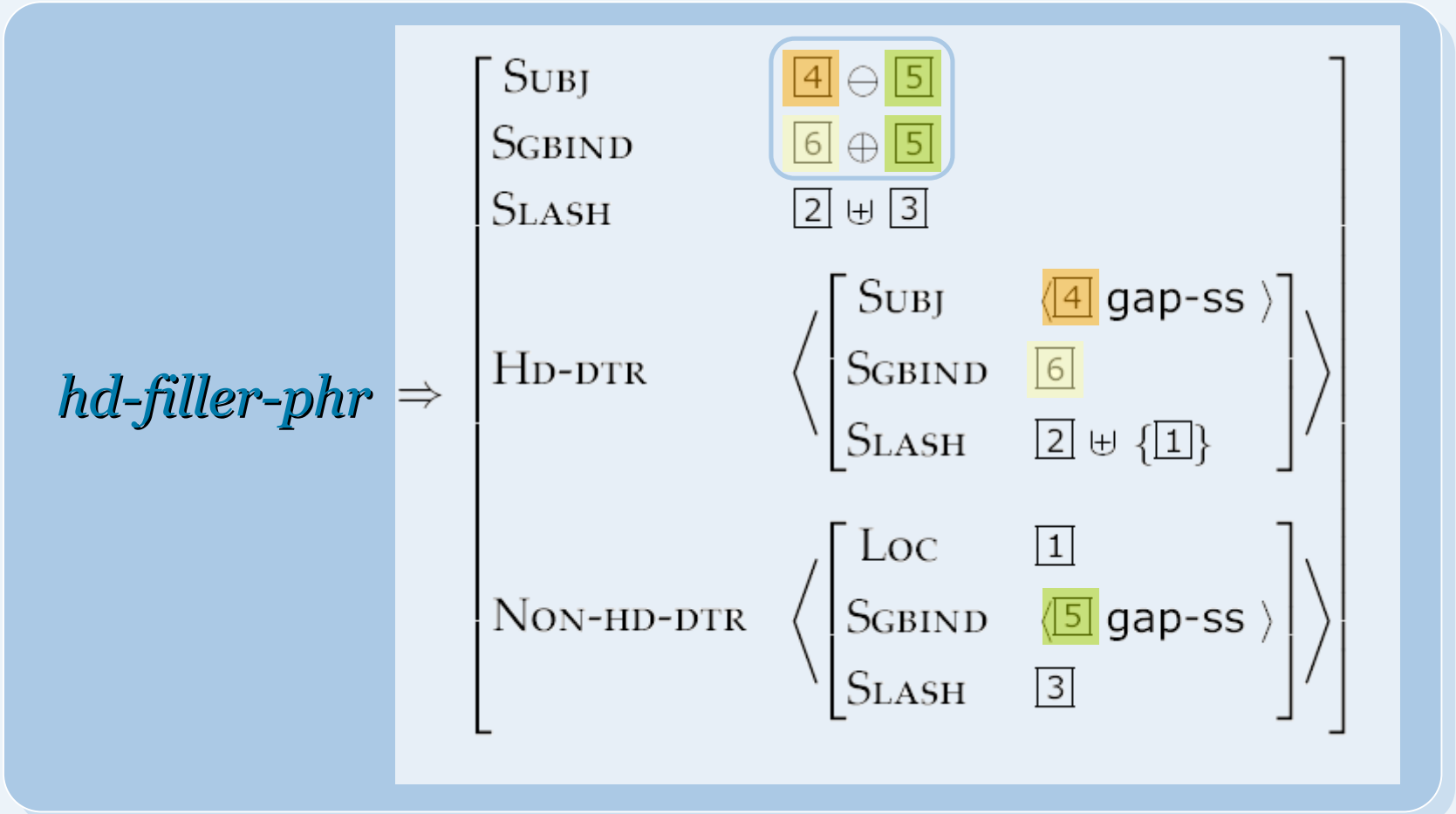
SGBIND Inheritance…

- Now that we have motivated a new feature in the lexicon, we have:
  - To define how this feature is treated.
  - To show how it works.
- In all head-val-phrases, SGBIND inheritance works similar to SLASH inheritance.
  - These are phrases involving head, complement, or subject daughters, but not filler daughters.

$$\textit{hd-val-phr} \Rightarrow \begin{bmatrix} \textsc{Sgbind} & \langle \boxed{1} \rangle \\ \textsc{Hd-dtr} & \begin{bmatrix} \textsc{Sgbind} & \langle \boxed{1} \rangle \end{bmatrix} \end{bmatrix}$$

SGBIND Inheritance

- The hd-filler-phrase must be specified as follows: -



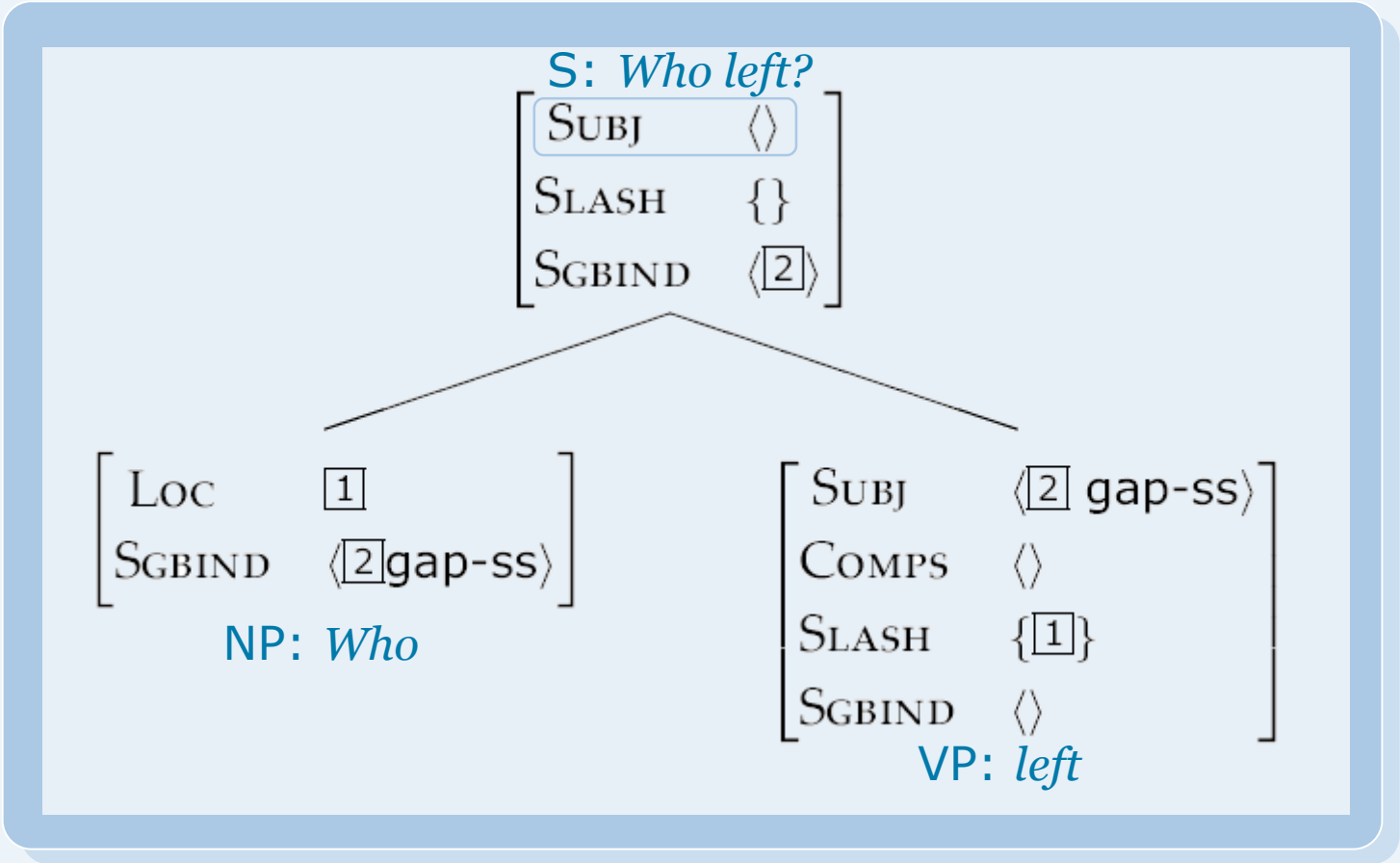
Lexical Entry of 'Who'

- The lexical entry of the Wh-interrogative 'who' would be as follows: -

$$\text{WHO:} \begin{bmatrix} \textsc{Slash} & \{\} \\ \textsc{Sgbind} & \langle \text{gap-ss} \rangle \end{bmatrix}$$

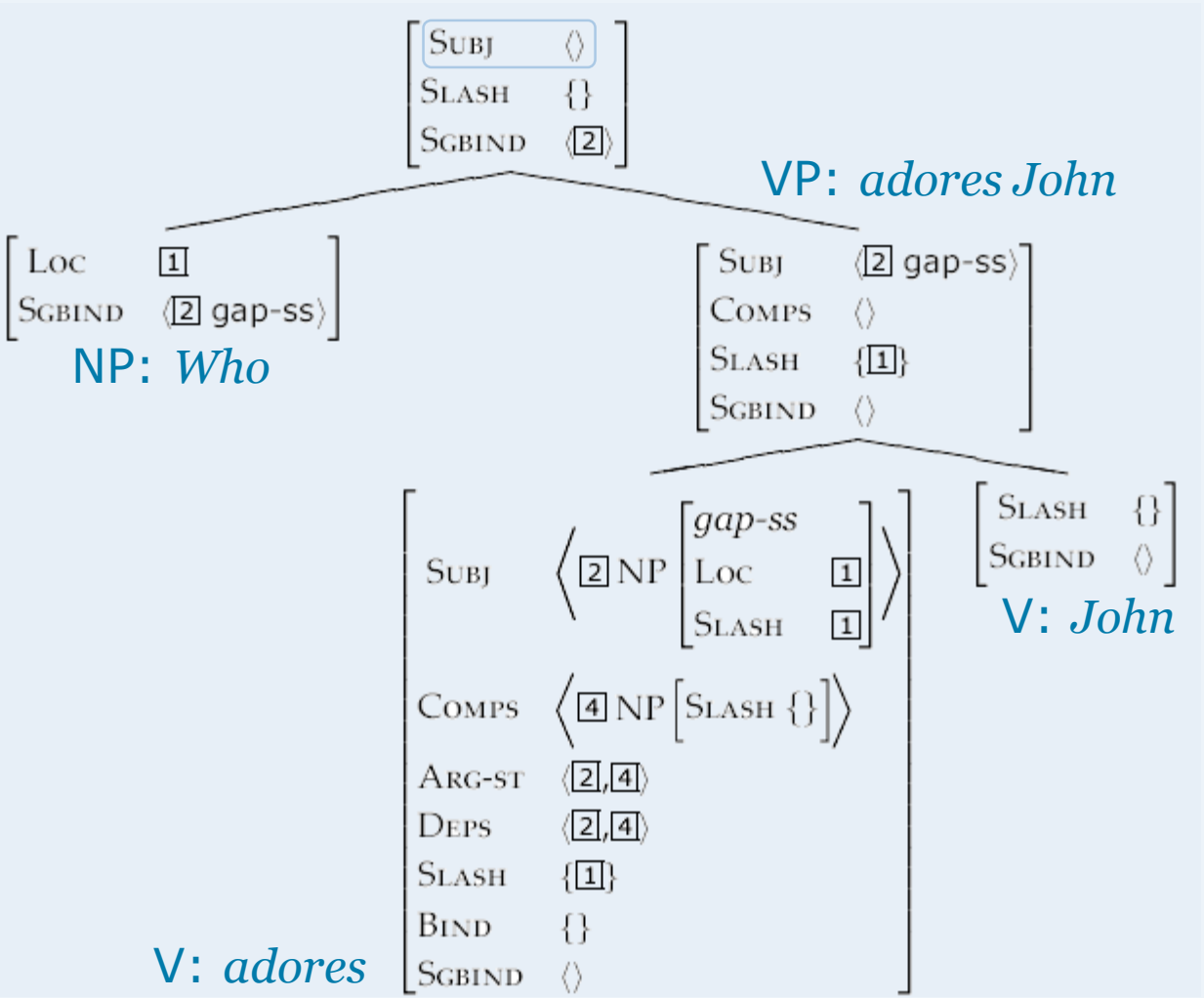
Examples...

- *Who*$_i$ ____$_i$ *left?*



...Examples

- *Who*$_i$ ____$_i$ *adores John?*



Discussion and Conclusion

Discussion...

- SGBIND
  - Saturates the *gap-ss* requirement and binds the unsaturated SUBJ list.
  - Blocks the P&S non-UDC analysis of questions such as Who_i ____$_i$ *left?*.
  - Does not require any phonologically empty element (trace) or lexical rules.

...Discussion...

- The following example, despite being a *that*-trace violation, is assumed to be treated as grammatical(by BMS 2001).
  - *This is the kind of person who I doubt* that, *under normal circumstances, would have anything to do with such a scheme.*
- While doing so, BMS suggest a possible reformulation of the constraints on the type head-filler-phrase.
  - The new feature, however, does not improve this situation.

...Discussion

- SGBIND concerns only Wh-interrogatives and complementisers that select for a phrase with a SUBJ <*gap-ss*>.
  - The French complementiser '*qui*', for example, always selects for a subject-extracted phrase.
    - *L'homme que tu a dit qui est heureux...*

    '*the man that you said that is happy...*'
  - This and other such complementisers (also in other languages) shall have SGBIND <*gap-ss*> in their lexical entries.

Summary

- Introduced the two approaches to analyse Subject Extraction (P&S and BMS).
- Looked at the issues with the latter in case of Wh-interrogatives.
- Motivated the introduction of a new feature SGBIND.
- Showed how it works.

Conclusion

- The new feature SGBIND addresses the issues involved fairly well.
- Lexically motivated analysis.
- The existing mechanisms remain unaffected as far as observed.

Questions !!!

References: -

- Head-Driven Phrase Structure Grammar;
  Pollard & Sag (1994).
- Satisfying Constraints on Extraction and Adjunction;
  Bouma, Malouf & Sag (2001).
- Class Notes;
  Valia Kordoni

Thank you !!!