JMORF/MORS — Morpho-Syntax

The Passive Construction

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Lecture 9
Location: KB-1.11

Overview

- Arguments for a lexicalist account
- The Passive Lexical Rule
  - Passives of intransitives
  - Passive input and output
- Passive ***be***
- Problems: passives and binding, the dative alternation

Arguments for a Lexicalist Account

The Passive in Transformational Grammar

- Passive was the paradigmatic transformation in early TG.

- Motivations
  - Near paraphrase of active/passive pairs
  - Simplified statement of cooccurrence restrictions
    - E.g. ***devour*** must be followed by an NP, ***put*** by NP-PP
    - Such restrictions refer to pre-transformational (**deep**) structure
  - Intuition that active forms were more basic, in some sense

- Its formulation was complex:
  - Promote object
  - Demote subject, inserting ***by***
  - Insert appropriate form of ***be***, changing main verb to a participle

But Transforming Whole Sentences Is Overkill

- Passive sentences look an awful lot like some actives:

  (1) *The cat was chased by the dog.*
  (2) *The cat was lying by the door.*

- Passives occur without ***be*** and without the ***by*** phrase:

  (3) *Cats chased by dogs usually get away.*
  (4) *My cat was attacked.*

So a Lexical Analysis Seems Called For

- What really changes are the verb's form and its cooccurrence restrictions (that is, its valence).

- There are lexical exceptions
  - Negative:
    (5) *Pat resembles Bo.*
    (6) **Bo is resembled by Pat.*
    (7) *That look suits you.*
    (8) **You are suited by that look.*
  - Positive:
    (9) *Chris is rumored to be a spy.*
    (10) **They rumor Chris to be a spy.*

We Posit a Lexical Rule

- Why not just list passive participles individually?
  - To avoid redundancy
  - To capture productivity (for example?)

- We make it a derivational (lexeme-to-lexeme) rule.
  Why?
  - Our constraints on lexeme-to-word rules wouldn't allow us to make Passive one: we change the syntax between input and output.

The Passive Lexical Rule

The Passive Lexical Rule

$$\left[\begin{array}{l}\textit{d-rule}\\ \text{INPUT}\quad \left\langle \boxed{1}\ ,\ \left[\begin{array}{l}\textit{tv-lxm}\\ \text{ARG-ST}\ \langle[\text{INDEX}\ i]\rangle\ \oplus\ \boxed{A}\end{array}\right]\right\rangle\\ \text{OUTPUT}\ \left\langle \text{F}_{PSP}\left(\boxed{1}\right),\ \left[\begin{array}{l}\textit{part-lxm}\\ \text{SYN}\qquad [\text{HEAD}\ [\text{FORM}\ \textit{pass}]]\\ \text{ARG-ST}\ \boxed{A}\ \oplus\ \left\langle\left(\left[\begin{array}{l}\text{PP}\\ [\text{FORM}\ \ \textit{by}]\\ \text{INDEX}\ i\end{array}\right]\right)\right\rangle\end{array}\right]\right\rangle\end{array}\right]$$

Questions

$$\left[\begin{array}{l}\textit{d-rule} \\ \text{INPUT} \quad \left\langle \boxed{1}, \left[\begin{array}{l}\textit{tv-lxm} \\ \text{ARG-ST} \ \left\langle \left[\text{INDEX} \ i\right] \right\rangle \oplus \boxed{A}\end{array}\right] \right\rangle \\ \\ \text{OUTPUT} \ \left\langle \text{F}_{PSP}(\boxed{1}), \left[\begin{array}{l}\textit{part-lxm} \\ \text{SYN} \quad \left[\text{HEAD} \ \left[\text{FORM} \ \textit{pass}\right]\right] \\ \\ \text{ARG-ST} \ \boxed{A} \oplus \left\langle \left(\left[\begin{array}{l}\text{PP} \\ \left[\begin{array}{ll}\text{FORM} & \textit{by} \\ \text{INDEX} & i\end{array}\right]\end{array}\right] \right) \right\rangle\end{array}\right] \right\rangle\end{array}\right]$$

- Why is the morphological function F_{PSP}?
- Why do we have a separate FORM value *pass*? Why not just *psp*?
- Is the ***by***-phrase argument-marking or predicational?

More Questions

$$\left[\begin{array}{l} \textit{d-rule} \\ \text{INPUT} \quad \left\langle \boxed{1}, \left[\begin{array}{l}\textit{tv-lxm}\\ \text{ARG-ST} \ \left\langle \left[\text{INDEX} \ \ i\right] \right\rangle \oplus \boxed{A}\end{array}\right] \right\rangle \\ \\ \text{OUTPUT} \ \left\langle \text{F}_{PSP}(\boxed{1}), \left[\begin{array}{l}\textit{part-lxm}\\ \text{SYN} \qquad \left[\text{HEAD} \ \left[\text{FORM} \ \ \textit{pass}\right]\right] \\ \\ \text{ARG-ST} \ \boxed{A} \oplus \left\langle \left(\left[\begin{array}{l}\text{PP}\\ \left[\begin{array}{ll}\text{FORM} & \textit{by}\\ \text{INDEX} & i\end{array}\right]\end{array}\right] \right) \right\rangle \end{array}\right] \right\rangle \end{array}\right]$$

- What makes the object turn into the subject?
- Why is the type of the input *tv-lxm*?
- What would happen if it were just *verb-lxm*?

Intransitives Have Passives in German

(11) *In der Küche wird nicht getanzt.*
in the kitchen is not danced
'There is no dancing in the kitchen.'

The exact analysis for such examples is debatable, but German, like many other languages, allows passives of intransitives, as would be allowed by our analysis if the input type in the Passive LR is *verb-lxm* (although the linking needs more work to get right).

Intransitives Have Passives in Japanese

Japanese also allows passives of intransitives, although with very different properties.

(12) *otoosan-ga shin-da.*
father-NOM died
'My father died.'

(13) *watashi-ha otoosan-ni shin-areta.*
me-TOP father-DAT died
'My father died on me.' lit. 'As for me, died by my father'

We need a separate (but related) rule for this.

Passive Input and Output

This entry

$$\left\langle \text{love}, \begin{bmatrix} \textit{stv-lxm} \\ \text{SYN} & \begin{bmatrix} \text{HEAD} & \begin{bmatrix} \textit{verb} \\ \text{AGR} & \boxed{1} \end{bmatrix} \\ \text{VAL} & \begin{bmatrix} \text{SPR} & \left\langle \begin{bmatrix} \text{AGR} & \boxed{1} \end{bmatrix} \right\rangle \end{bmatrix} \end{bmatrix} \\ \text{ARG-ST} & \left\langle \text{NP}_i \text{ , NP}_j \right\rangle \\ \text{SEM} & \begin{bmatrix} \text{INDEX} & s \\ \text{RESTR} & \left\langle \begin{bmatrix} \text{RELN} & \textbf{love} \\ \text{SIT} & s \\ \text{LOVER} & i \\ \text{LOVED} & j \end{bmatrix} \right\rangle \end{bmatrix} \end{bmatrix} \right\rangle$$

also gets you this

$$\left\langle \text{loved}, \begin{bmatrix} \textit{part-lxm} \\ \text{SYN} & \begin{bmatrix} \text{HEAD} & \begin{bmatrix} \textit{verb} \\ \text{AGR} & \boxed{1} \\ \text{FORM} & \textit{pass} \end{bmatrix} \\ \text{VAL} & \begin{bmatrix} \text{SPR} & \left\langle \begin{bmatrix} \text{AGR} & \boxed{1} \end{bmatrix} \right\rangle \end{bmatrix} \end{bmatrix} \\ \text{ARG-ST} & \left\langle \text{NP}_j \left(, \begin{bmatrix} \text{PP} \\ \begin{bmatrix} \text{FORM} & \textit{by} \\ \text{INDEX} & i \end{bmatrix} \end{bmatrix} \right) \right\rangle \\ \text{SEM} & \begin{bmatrix} \text{INDEX} & s \\ \text{RESTR} & \left\langle \begin{bmatrix} \text{RELN} & \textbf{love} \\ \text{SIT} & s \\ \text{LOVER} & i \\ \text{LOVED} & j \end{bmatrix} \right\rangle \end{bmatrix} \end{bmatrix} \right\rangle$$

Through the magic of the Passive Lexical Rule!

And Also This

$$\left\langle \text{loved}, \begin{bmatrix} \textit{word} \\ \text{SYN} & \begin{bmatrix} \text{HEAD} & \begin{bmatrix} \textit{verb} \\ \text{AGR} & \boxed{1} \\ \text{FORM} & \textit{pass} \end{bmatrix} \\ \text{VAL} & \begin{bmatrix} \text{SPR} & \left\langle \boxed{2}\begin{bmatrix} \text{AGR} & \boxed{1} \end{bmatrix} \right\rangle \\ \text{COMPS} & \boxed{\text{B}} \end{bmatrix} \end{bmatrix} \\ \text{ARG-ST} & \left\langle \boxed{2}\text{NP}_j \right\rangle \oplus \boxed{\text{B}} \left\langle \left(\begin{bmatrix} \text{PP} \\ \begin{bmatrix} \text{FORM} & \textit{by} \\ \text{INDEX} & i \end{bmatrix} \end{bmatrix} \right) \right\rangle \\ \text{SEM} & \begin{bmatrix} \text{INDEX} & s \\ \text{RESTR} & \left\langle \begin{bmatrix} \text{RELN} & \textbf{love} \\ \text{SIT} & s \\ \text{LOVER} & i \\ \text{LOVED} & j \end{bmatrix} \right\rangle \end{bmatrix} \end{bmatrix} \right\rangle$$

Through the magic of the Constant Lexeme Lexical Rule!

Passive *be*

The *be* That Occurs with Most Passives

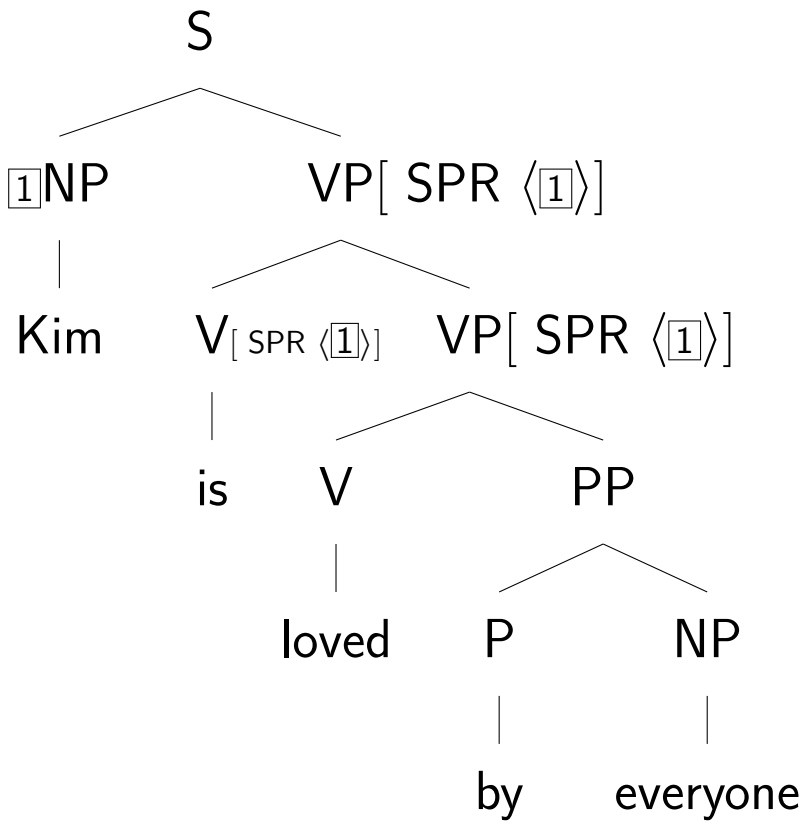
$$\left\langle \text{be}, \left[\begin{array}{l} \textit{be-lxm} \\ \text{ARG-ST} \left\langle \boxed{1}, \left[\begin{array}{l} \text{SYN} \left[\begin{array}{ll} \text{HEAD} & \left[\begin{array}{l} \textit{verb} \\ \text{FORM } \textit{pass} \end{array}\right] \\ \text{VAL} & \left[\begin{array}{ll} \text{SPR} & \langle \boxed{1} \rangle \\ \text{COMPS} & \langle\rangle \end{array}\right] \end{array}\right] \\ \text{SEM} \left[\text{INDEX } s\right] \end{array}\right] \right\rangle \\ \text{SEM} \left[\begin{array}{ll} \text{INDEX} & s \\ \text{RESTR} & \langle\rangle \end{array}\right] \end{array}\right] \right\rangle$$

Questions About the Entry for *be*

$$\left\langle \text{be}, \left[\begin{array}{l} \textit{be-lxm} \\ \text{ARG-ST} \left\langle \boxed{1}, \left[\begin{array}{ll} \text{SYN} & \left[\begin{array}{ll} \text{HEAD} & \left[\begin{array}{ll} \textit{verb} \\ \text{FORM} & \textit{pass} \end{array}\right] \\ \text{VAL} & \left[\begin{array}{ll} \text{SPR} & \left\langle \boxed{1} \right\rangle \\ \text{COMPS} & \langle\rangle \end{array}\right] \end{array}\right] \\ \text{SEM} & \left[\text{INDEX} \quad s\right] \end{array}\right] \right\rangle \\ \text{SEM} \quad \left[\begin{array}{ll} \text{INDEX} & s \\ \text{RESTR} & \langle\rangle \end{array}\right] \end{array}\right] \right\rangle$$

- Why doesn't it include valence features?
- What is the category of its complement (i.e. its 2nd argument)?
- What is its contribution to the semantics of the sentences it appears in?
- Why is the first argument tagged as identical to the second argument's SPR value?

Passive Tree



- Which rule licenses each node?
- What is the SPR value of the upper VP?
- What is the SPR value of the lower VP?
- What is the SPR value of *is*?

More Questions

- Why do we get this?

  (14) *They are noticed by everyone.*

- Why don't we get this?

  (15) **Them are noticed by everyone.*

- Why don't we get this?

  (16) **They is noticed by everyone.*

- What would facts like these entail for a transformational analysis?

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Problems

P1: Passives and Binding

The analysis of passive makes some predictions about binding possibilities in passive sentences. Consider the following data:

(i) *She$_i$ was introduced to herself$_i$ (by the doctor).*
(ii) **She$_i$ was introduced to her$_i$ (by the doctor).*
(iii) *The barber$_i$ was shaved (only) by himself$_i$.*
(iv) **The barber$_i$ was shaved (only) by him$_i$.*
(v) *The students$_i$ were introduced to each other$_i$ (by Leslie).*
(vi) **The students$_i$ were introduced to them$_i$ (by Leslie).*
(vii) *Kim was introduced to Larry$_i$ by himself$_i$.*
(viii) **Kim was introduced to himself$_i$ by Larry$_i$.*

Assuming that ***to*** and ***by*** in these examples are uniformly treated as argument-marking prepositions, does the treatment of passives sketched in the text correctly predict the

judgements in (i)–(viii)? If so, explain why; if not, discuss the inadequacy of the analysis in precise terms.

An ideal answer should examine each one of the eight sentences and determine if it follows the binding principles. That is, the analysis of passive presented in this chapter associates a particular ARG-ST list with the passive verb form in each example and these lists interact with the binding principles of Chapter 7 to make predictions. Check to see if the predictions made by our Binding Theory match the grammaticality judgements given.

P3: The Dative Alternation

The **dative alternation** could also be described by a lexical rule: that is, a rule that produces entries for verbs that appear in both of the valence patterns exemplified in (i) and (ii):

(i) *Dale {gave/handed/sold/loaned/mailed} Merle a book.*
(ii) *Dale {gave/handed/sold/loaned/mailed} a book to Merle.*

A. Is this alternation productive? Justify your answer with at least two examples.

B. Formulate a lexical rule for the dative alternation.

C. Show how your rule interacts with the Passive Lexical Rule to make possible the generation of both (iii) and (iv). Your answer should include ARG-ST values showing the effect of applying the rules.

(iii) *Merle was handed a book by Dale.*

(iv) *A book was handed to Merle by Dale.*

D. Explain why your rule correctly fails to license (v) (or, more precisely, fails to license (v) with the sensible meaning that the book was the thing handed to Merle).

(v) ?**A book was handed Merle by Dale.*

Acknowledgments and References

- Course design and slides borrow heavily from Emily Bender's course: *Linguistics 566: Introduction to Syntax for Computational Linguistics*
  http://courses.washington.edu/ling566

- This lecture complements Sag et al. (2003, Chapter 10)

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References

Ivan A. Sag, Tom Wasow, and Emily Bender. 2003. *Syntactic Theory: A Formal Introduction*. CSLI Publications, Stanford, second edition.