THE SYNTAX OF SPATIAL ANAPHORA
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1. Introduction: the data

1.1. Perspective (Cantrall 1974)

(1) a. They placed their guns, as they looked at it, in front of themselves/*them.
    b. They placed their guns, as I looked at it, in front of *themselves/them.

(2) self-form = subject perspective
    pronoun = speaker/observer perspective

1.2. The nature of the location (Kuno 1987)

(3) a. John hid the book behind himself. (=direct contact between John and book)
    b. John hid the book behind him. (=no physical contact required)
(4) a. John put the blanket under himself. (=direct contact)
    b. John put the blanket under him. (=no physical contact required)
(5) a. Mary kept her childhood dolls close to herself. (=concrete: against her body)
    b. Mary kept her childhood dolls close to her. (=more abstract: proximity/vicinity)

1.3. Quantifier-pronoun binding

(6) a. *Nobody/*Every boy saw a snake near him.
    b. Nobody/Everyone/Every boy saw a snake near himself.
    c. Nobody/Everyone/Every boy saw a snake near them.
Nobody/Everyone/Every boy thought that he was going to win the prize.

2. **BACKGROUND ASSUMPTIONS CONCERNING ANAPHR BINDING**

(Simplified) **Syntax of Reflexive Relationships**

- Reflexive pronouns enter the derivation with unvalued features (universally).
- These features are valued through an Agree relationship with the antecedent.
- Agree does not copy feature values, it causes feature values to be shared by probe and goal.

- **Lexical Valued Features**
  - \{P:3, N:sg, G:m\} (e.g. goal)
  - \{P:_, N:_, G:_-_\} (probe)
  - \{P:3*, N:sg*, G:m*\} (features valued after Agree)

- **Syntax Anaphor Antecedent**
  - Reflexive: \[ XP [DP2 \{P:_, N:_, G:_-_\}] [VP [DP1 \{P:3, N:sg, G:m\}]))) \]
  - Nonreflexive: \[ XP [DP1 \{P:3, N:sg, G:m\}] [VP [DP2 \{P:3, N:sg, G:m\}]))) \]

- Interpretation of referential dependence at the interface.

3. **Axial Parts**

3.1. **Spatial prepositions**

Subsets of the vocabulary invoking the spatial axes of an object (Jackendoff 1996, see also Levinson 1996, Svenonius 2006):

- objects have “axial parts” (their top, bottom, front, back, sides and ends), which behave grammatically like parts of the object. They are regions of the object determined by their relation to the object’s axes.
• certain spatial prepositions (above, below, next to, in front of, behind, alongside, left of and right of) pick out a region determined by extending the reference object’s axial dimensions out into the surrounding space.

The axial vocabulary is used within a frame of reference; frames of reference come in two kinds:
• an intrinsic or object-centered frame (this frame has to do with properties of the object, e.g. its shape or its canonical orientation).
• a deictic or observer-centered frame

(15) The suitcase is behind the car.

A. Observer-centered frame
   observer perspective:
   invisible side of car

B. Object-centered frame
   car perspective:
   rear side of car

(16) The suitcase is behind the tree.

A. Observer-centered frame
   observer perspective:
   invisible side of tree

B. *Object-centered frame
   tree perspective:
   rear side of tree

3.2. Implementation: spatial relationships

• The difference between an object-centered and an observer-centered interpretation for a preposition is grammatically represented.
(17) Assumption about the syntax of Axial parts (I) (Svenonius 2006)
When used with a locative sense, prepositions project an AxPartP, whose head contains a set of feature(s) relevant to the preposition

(18) \( [\text{Place} \in \text{AxPart} \ [\text{Kase of [D the car]]}] \) (Svenonius 2006:53)

(19) \{\text{HORIZONTAL: back, front}\}
\{\text{VERTICAL: top, bottom}\}

(20)

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<thead>
<tr>
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<th>( P )</th>
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<tbody>
<tr>
<td>in front of</td>
<td>front-back</td>
<td>under</td>
<td>top-bottom</td>
<td>any dimension</td>
</tr>
<tr>
<td>behind</td>
<td>front-back</td>
<td>near</td>
<td>any dimension</td>
<td>(existential)</td>
</tr>
<tr>
<td>on top of</td>
<td>top-bottom</td>
<td>around</td>
<td>top-bottom</td>
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<td>on</td>
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<td>with</td>
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(21) Assumption about the syntax of Axial parts (II)
Objects with intrinsic axial parts have a set of features listing the relevant axial parts.

- The object-centered interpretation is the result of an Agree relation internal to the PP between Axpart and axial features of its complement DP.

(22) Object-centered interpretation (see (15B) above):
\[
\text{DP} \quad V [\text{Place}^\circ \ [\text{AxPart} \ {\text{HOR: } \_\_} \ [\text{Kase} \ O \ [\text{DP} \ D^\circ \ [\text{NP} \ {\text{HOR: back, front}}]]]]] \\
\text{The suitcase is behind the car}
\]

Agree \[ \rightarrow \]

\[
\text{DP} \quad V [\text{Place}^\circ \ [\text{AxPart} \ {\text{HOR: back*}} \ [\text{Kase} \ O \ [\text{DP} \ D^\circ \ [\text{NP} \ {\text{HOR: back, front}}]]]]] \\
\text{The suitcase is behind the car}
\]

- The observer-centered interpretation is the result of a binding relationship between Axpart and something external to the PP, the Speaker.

(23) Assumptions about the syntax and interpretation of Speaker/Observer

a. Any sentence has a deictic center, a reference point in relation to which deictic expressions are to be interpreted. The deictic center is the present time, location, participant role, and so forth of the speaker. (Fillmore 1975:83-85; 1997)

b. Observer or deictic perspective is to be identified with Speaker perspective.

c. The Speaker is grammatically represented in EvidentialP.

d. The Speaker can anchor AxParts via variable binding.

(24) Observer-centered interpretation (see (16A) above):
Axpart has lexically valued feature \{\text{HOR: back}\}. Speaker binds Axpart variable.

\[
[\text{Evid} \text{Sp}_{IP} \ [\text{DP} \ V [\text{Place}^\circ \ [\text{AxPart} \ {\text{HOR: back}}]_\text{Sp} \ [\text{Kase} \ O \ [\text{DP} \ D^\circ \ [\text{NP} \ {\text{VER: top, bottom}}]]]]] \\
\text{The suitcase is behind the tree}
\]
(25) Object-centered: unvalued feature: \{\text{HOR: }\_\_\} \rightarrow \text{Agree} \rightarrow \{\text{HOR: back}\}
Observer-centered: lexically valued feature: \{\text{HOR: back}\}
Postsyntactic lexical insertion: \_\text{bind}.

(26) Anaphors: unvalued $\varphi$-features: \{P:_, N:_, G:_, \_\} \rightarrow \text{Agree} \rightarrow \{P:3*, N:sg*, G:m*\}
Pronouns: lexically valued $\varphi$-features: \{P:3, N:sg, G:m\}
Postsyntactic lexical insertion.

4. Binding in \textit{snake}-sentences

(27) \textit{Assumptions about Axial parts, pronouns and -self.} (Postma 1996, Pica 1988)

a. pronouns lack grammatical axial dimensions.
b. \textit{self} contributes grammatical axial dimensions to the pronoun it attaches to.

4.1. Binding

- Pronoun has no axparts, i.e. allows no object-centered perspective (like tree in (16).
  Axpart has unvalued feature \_\_\rightarrow \text{crash}.
  Axpart has lexically valued feature \rightarrow \text{Speaker binds AxPart} \rightarrow \text{observer-centered interpretation}

\begin{align*}
\text{Event} & \quad \text{Subject} \quad \text{Pronoun} \quad \text{Axpart} \quad \text{Object} \\
\text{Evid} & \quad \text{Sp}_{\text{IP,SG}} & \quad \text{John saw a snake} \\
\text{Axpart} & \quad \text{place} & \quad \text{behind} & \quad \{\text{HOR: back}\} & \quad \text{Sp}_{\text{Kase, O \_D, him}} \\
\text{VP} & \quad \text{John} & \quad \text{VP: saw a snake} \\
\end{align*}

- Anaphor does have axparts (like car in (15)) \rightarrow \text{values Axpart under Agree} \rightarrow \text{object-centered interpretation}

\begin{align*}
\text{Event} & \quad \text{Subject} \quad \text{Pronoun} \quad \text{Axpart} \quad \text{Object} \\
\text{Evid} & \quad \text{Sp}_{\text{IP,SG}} & \quad \text{John saw a snake} \\
\text{Axpart} & \quad \text{place} & \quad \text{behind} & \quad \{\text{HOR: back}\} & \quad \text{Sp}_{\text{Kase, O \_D, himself}} \\
\text{VP} & \quad \text{John} & \quad \text{VP: saw a snake} \\
\end{align*}

- Speaker-variable in (28)/(30) creates opaque domain for Binding:

\begin{align*}
\text{Event} & \quad \text{Subject} \quad \text{Pronoun} \quad \text{Axpart} \quad \text{Object} \\
\text{Evid} & \quad \text{Sp}_{\text{IP,SG}} & \quad \text{Everyone saw a snake} \\
\text{Axpart} & \quad \text{place} & \quad \text{near} & \quad \{\text{HOR: front, back}\} \\
\text{VP} & \quad \text{He sat down} \\
\end{align*}

- C-command is a necessary, but not a sufficient condition for variable binding (Kratzer 1998, 2006)

(32) Only I got a question that I understood.
\textit{Strict}: nobody else got a question that I understood
\textit{Sloppy}: nobody else is an \text{x} such that \text{x} got a question that \text{x} understood.

\begin{align*}
\text{Event} & \quad \text{Subject} \quad \text{Pronoun} \quad \text{Axpart} \quad \text{Object} \\
\text{Evid} & \quad \text{Speaker}_{\text{IP,SG}} & \quad \text{Only think that Mary won’t come if I invite her.} & \quad \text{only strict} \\
\text{Axpart} & \quad \text{place} & \quad \text{near} & \quad \{\text{HOR: front, back}\} \\
\text{VP} & \quad \text{Only I got a question that you thought I could answer.} & \quad \text{only strict} \\
\end{align*}

(33) a. Only I think that Mary won’t come if I invite her. \quad \text{only strict}
b. Only I got a question that you thought I could answer. \quad \text{only strict}

(34) a. Only Sam thinks that Mary will not come if he invites her. \quad \text{strict \& sloppy}
b. Only I got a question that I thought I could answer. \quad \text{strict \& sloppy}
in a case like (30), variable binding of the 3P pronoun by the quantifier is blocked by an intervening speaker with a different (1P) person feature.

4.2. Perspective

(1) a. They placed their guns, as they looked at it, in front of themselves/*them.
   b. They placed their guns, as I looked at it, in front of *themselves/them.

(35) a. Self-form: axial features value unvalued Axp	→ Object-centered interpretation
   (the object is anaphoric with the subject → subject perspective)
   [They placed their guns, as they looked at it,
   [Place in [Axp	 front {HOR: front*} \[ of \[D themselves {HOR: front, back}\]\]]]]
   b. Pronoun: no axial features → Axp	 is lexically valued and bound by Speaker → Speaker-centered interpretation
   [Evid Sp_1P.SG [They placed their guns, as I looked at it,
   [Place in [Axp	 front {HOR: front} sp \[ of \[D them \]\]]]]]

4.3. The nature of the location

(5) a. Mary kept her childhood dolls close to herself. (=concrete: against her body)
   b. Mary kept her childhood dolls close to her. (=more abstract: proximity/vicinity)

- The concrete-abstract distinction follows from the assumptions in (27):
  - axial dimensions provided by self account for a strictly locative interpretation
  - the pronoun lacks Axp\texteds and therefore spatial dimensions. The Speaker's perspective determines a broad and rather abstract interpretation of 'general vicinity'.

(36) John always keeps his wits about him/*himself. (Bouchard 1983:19)

(37) a. John put that episode behind him(*self).
   b. John put the box behind him(self).
4.4. Left-right perspective in pictures

- Left-right confusions when viewing a picture.

(38) A. Bronzino (1503-1572) Eleonora of Toledo and Giovanni de Medici

- Art historians’ use strictly unambiguous terminology: ‘proper left’ and ‘proper right’ refer to the left or right from the perspective of the person that is being described.


(40) a. Eleonora has positioned Giovanni to the right/left of herself.
b. Eleonora has positioned Giovanni to the right/left of her.

- The pronoun permits both perspectives: the speaker/observer is like the omniscient author of a novel, and can take whatever perspective (s)he chooses, including that of the subject/person depicted.
- See also (15) above: *The suitcase is to the left/right of the tree* → onlooker perspective
5. **Conclusions**

- The difference between an observer-centered and an object-centered perspective is syntactically represented.
- Reflexives have axial dimensions, pronouns do not.

This explains:

- perspective differences between reflexives and pronouns;
- the peculiar quantifier binding properties of reflexives and pronouns;
- differences with respect to the nature of the location.

6. **References**