# 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/\*?Everyone/?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.

(7) Nobody/Everyone/Every boy thought that he was going to win the prize.

#### 2. BACKGROUND ASSUMPTIONS CONCERNING ANAPHOR BINDING

- (8) (Simplified) Syntax of Reflexive Relationships
  - a. Reflexive pronouns enter the derivation with unvalued features (universally).
  - b. These features are valued through an Agree relationship with the antecedent
  - c. Agree does not copy feature values, it causes feature values to be shared by probe and goal.
- (9) a. {P:3, N:sg, G:m} lexically valued features (e.g. goal)
  - b. {P:\_, N:\_, G:\_} unvalued features (probe)
  - c. {P:3\*, N:sg\*, G:m\*} features valued after Agree (probe)
- (10) [XP [DP2 {P:\_, N:\_, G:\_}] [YP [DP1 {P:3, N:sg, G:m}]]] (reflexive) anaphor antecedent

$$Agree \rightarrow$$

$$[XP [DP2 {P:3*, N:sg*, G:m*}] [YP [DP1 {P:3, N:sg, G:m}]]]$$

\* = shared features  $\rightarrow$  interpretation of referential dependence at the interface

(11) 
$$\left[\underset{XP}{\text{[DP1]}}\left\{P:3, N:sg, G:m\right\}\right]\left[\underset{YP}{\text{[DP2]}}\left\{P:3, N:sg, G:m\right\}\right]\right]$$
 (nonreflexive)   
R-expression pronoun

- → interpretation of disjoint reference at the interface
- (12) a. Peter, looked around him,/j.
  - b. Peter, looked around himself,/\*;.
- (13)  $\left[ v_{P} \left[ P_{PP} P_{DP2} \left\{ P:\_, N:\_, G:\_ \right\} \right] \right] \left[ v_{P} \left[ P_{DP1} \left\{ P:3, N:sg, G:m \right\} \right] \left[ v_{P} V \right] \right] \right]$  around himself Peter looked

$$\rightarrow$$
 Agree

#### 3. AXIAL PARTS

#### 3.1. Spatial prepositions

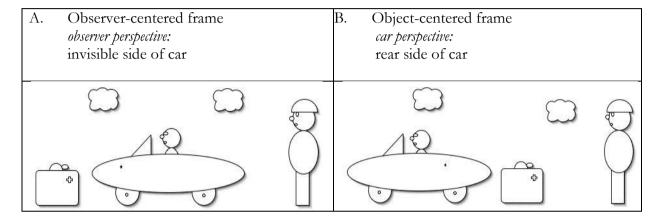
Subsets of the vocabulary invoking the spatial axes of an object (Jackendoff 1996, see also Levinson 1996, Svenonius 2006):

• 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.

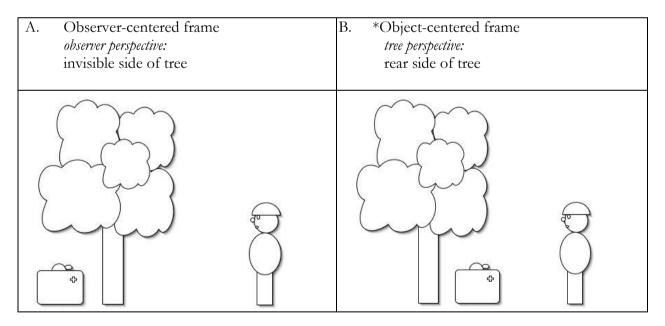
• certain spatial prepositions (above, below, next to, in front of, behind, alongside, left of and right of) pick out a region determined by extending the reference object's axial dimensions out into the surrounding space.

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.



(16) The suitcase is behind the 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)  $\left[_{\text{Place}} \text{ in } \left[_{\text{AxPart}} \text{ front } \left[_{\text{Kase}} \text{ of } \left[_{\text{D}} \text{ the car } \right]\right]\right]\right]$  (Svenonius 2006:53)

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

(20)

P	dimension	P	dimension
in front of	front-back	under	top-bottom
behind	front-back	near	any dimension (existential)
on top of	top-bottom	around	all dimensions (universal)
on	top-bottom	with	undefined

(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):

DP 
$$V_{[Place]}$$
 Place°  $[AxPart]$  {HOR: \_\_\_}}  $[Kase]$   $O_{[DP]}$   $O_{[NP]}$  {HOR: back, front}]]]]]] The suitcase is be- hind the car

DP  $V_{[Place]}$  Place°  $[AxPart]$  {HOR: back\*}  $[Kase]$   $O_{[DD]}$   $O_{[NP]}$  {HOR: back, front}]]]]]] The suitcase is be- hind 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.
- Observer-centered interpretation (see (16A) above):

  Axpart has lexically valued feature {HOR: back}. Speaker binds Axpart variable.

- (25) Object-centered: unvalued feature: {HOR: \_\_}} → Agree → {HOR: back\*}
  Observer-centered: lexically valued feature: {HOR: back}
  Postsyntactic lexical insertion: -hind.
- (26) Anaphors: unvalued  $\varphi$ -features: {P:\_, N:\_, G:\_}  $\rightarrow$  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 SNAKE-SENTENCES
- (27) Assumptions about Axial parts, pronouns and -self. (Postma 1996, Pica 1988)
  - a. pronouns lack grammatical axial dimensions.
  - b. 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 → crash.
   Axpart has lexically valued feature → Speaker binds AxPart → observer-centered interpretation
- (28)  $\left[ \sum_{\text{Evid}} \mathbf{Sp}_{\text{1P.SG}} \right]_{\text{TP}} \text{ John saw a snake}$   $\left[ \sum_{\text{Place}} \mathbf{behind} \right]_{\text{AxPart}} \left\{ \mathbf{HOR: back} \right\}_{\mathbf{Sp}} \left[ \sum_{\text{Kase}} \emptyset \right]_{\mathbf{D}} \text{ him } \left[ \sum_{\text{VP}} \mathbf{John} \right]_{\text{VP}} \frac{\mathbf{John}}{\mathbf{Saw a snake}} \left[ \mathbf{John} \right]_{\mathbf{MP}} \left[ \mathbf{John} \right]_{\mathbf{NP}} \left[ \mathbf{$
- Anaphor does have axparts (like car in (15))→ values Axpart under Agree → object-centered interpretation
- (29) [Evid **Sp**<sub>1P.SG</sub> [TP John saw a snake [vP [Place] behind [AxPart {HOR: back\*}] [Kase Ø [D himself {HOR: front, back}]]]] [vP John [vP saw a snake]]]]]] (the object is anaphoric to the subject → object-centered = subject perspective)
- Speaker-variable in (28)/(30) creates opaque domain for Binding:
- (30) \*? [Evid **Speaker** 1P.SG Everyone saw a snake [Place near [AxPart  $\emptyset_{Speaker}$  [Kase  $\emptyset$  [D him ]]]]]]]
- (31) [Evid Speaker<sub>1P.SG</sub> Everyone came in.] [Evid Speaker<sub>1P.SG</sub> \*He sat down.]
- 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.

  Strict: nobody else got a question that I understood

  Sloppy: nobody else is an x such that x got a question that x understood.
- (33) a. Only I think that Mary won't come if I invite her. only strictb. Only I got a question that you thought I could answer. only strict
- (34) a. Only Sam thinks that Mary will not come if he invites her. strict & sloppy b. Only I got a question that I thought I could answer. 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 Axpart → Object-centered interpretation
   (the object is anaphoric with the subject → subject perspective)
   [They placed their guns, as they looked at it,
   [Place in [AxPart front {HOR: front\*}] [K of [D themselves {HOR: front, back}]]]]]
  - b. Pronoun: no axial features → Axpart is lexically valued and bound by Speaker → Speaker-centered interpretation
     [Evid Sp<sub>1P,SG</sub> [ They placed their guns, as I looked at it, [Place in [AxPart front {HOR: front}<sub>Sp</sub> [K 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 Axparts 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.
- 'Eleonora curves her proper right hand protectively around her son's shoulder. He leans slightly against her, resting his proper left hand on her lap like a plump starfish.' Serena Urry, (1998). Evidence of replication in a portrait of Eleonora of Toledo by Agnolo Bronzino and workshop. *Journal of the American Institute for Conservation*, 37:2, 211-221. <a href="http://aic.stanford.edu/jaic/articles/jaic37-02-004.html">http://aic.stanford.edu/jaic/articles/jaic37-02-004.html</a>
- (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  $\rightarrow$  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.

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