

**Abstract**

The goal of the present study is to provide a morphosyntactic solution to the problem of first and second person binding. The phenomenon violates Kaplan's Fixity Thesis. The most well-known approach to the issue is the minimal pronoun approach. However, some empirical problems (partial / split binding) of the approach have been pointed out in the literature. Recent studies suggest that not all bound pronouns start their life as a minimal pronoun, and that they may originate with some features. A question arises as to which bound pronouns originate with what type of features and structures. The present proposal contributes to solving this question by drawing on the DP-internal composition of the bound first-person plural pronoun *we*, and how it interacts with the sentence-level syntax.

**1 Introduction****1.1 Rullmann's puzzle (2003, 2004)**

- (1) We all think we're smart.  
 (2) a.  $\forall x [x \in WE. x \text{ thinks that } WE \text{ are smart}]$  *strict*  
 b.  $\forall x [x \in WE. x \text{ thinks that } x \text{ is smart}]$  *bound* (Rullmann 2004)
- ◇ Two problems concerning the bound reading (2)b.
    - ✓ The person feature on the bound pronoun *we* does not seem to be interpreted. (2)b can be paraphrased as *Each of us thinks that he/she is smart.*
    - ✓ The number feature on the bound pronoun *we* does not seem to be interpreted (See also Heim, Lasnik and May 1991).
  - ◇ Sentences like (3) necessitate the variable construal. The same string of words in a root environment as in (4) is infelicitous.
    - (3) We all think we're the smartest person in the world.
    - (4) # We're the smartest person in the world. (Rullmann 2004)

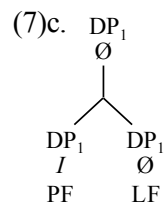
**1.2 Goal**

The goal of this study is to provide a morphosyntactic solution to the puzzle above.

- Q1: Why is there a contrast in felicitousness between (3) and (4)?  
 Q2: What morphosyntactic factors give rise to the two readings of (1)?  
 Q3: Are the  $\phi$ -features on bound pronouns not interpreted at all?

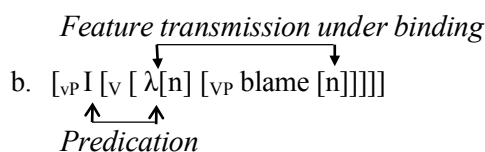
**2 The minimal pronoun approach (Kratzer 1998, 2009; Von Stechow 2003; Heim 2008)****2.1 Kratzer (1998): Basics**

- (5) Only I got a question that I understood.  
 (6) a. [Only I] [ $\lambda x. x \text{ got a question that } I \text{ understood}$ ] (*strict, indexical*)  
 b. [Only I] [ $\lambda x. x \text{ got a question that } x \text{ understood}$ ] (*sloppy, bound*)  
 (Kratzer 1998, attributed to Heim's lectures)
- ◇ The typical indexical pronoun *I* is bound, against the Kaplanian Fixity Thesis (Kaplan 1989). Why?
  - ◇ Some bound pronouns are Minimal(Zero) Pronouns:  $\emptyset_n$ ;  $[[\emptyset_n]]^{g,c}=g(n)$
- (7) a. PF: Only I got a question that I understood.  
 b. LF: [Only I]<sub>*I*</sub> got a question that  $\emptyset_I$  understood.



## 2.2 Kratzer (2009): Feature transmission under binding & predication

- (8) a. I blame myself.

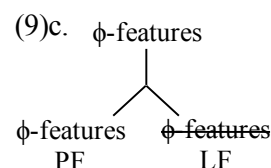


- ✧ Kratzer (2009) proposes feature transmission for local binding. For long distance binding, she suggests context shifters (building on Cable 2005).

## 2.3 Von Stechow (2003): Feature deletion

- ✧ Semantically bound variables are born with  $\phi$ -features, but they are deleted in LF.

- (9) a. Only I did my homework.  
 b. SS: [Only I<sub>8</sub>] did my<sub>8</sub> homework  
 c. LF: [DP Only I<sub>5</sub>]  $\lambda_8$  t<sub>8</sub> did 8<sup>1st</sup>'s homework



## 2.4 Problem: Partial binding and split binding

- (10) Every woman<sub>1</sub> I<sub>2</sub> date wants us<sub>1+2</sub> to get married. (Rullmann 2004)  
*partial binding* (see also Partee 1989)
- (11) Every woman<sub>1</sub> told [her<sub>1</sub> husband]<sub>2</sub> that they<sub>1+2</sub> should invest in the stock market.  
 (Rullmann 2003) *split binding*

- ✧ There are no single DP binders from which the bound pronouns may get their  $\phi$ -feature values.

## 3 Context shifting approach (Cable 2005)

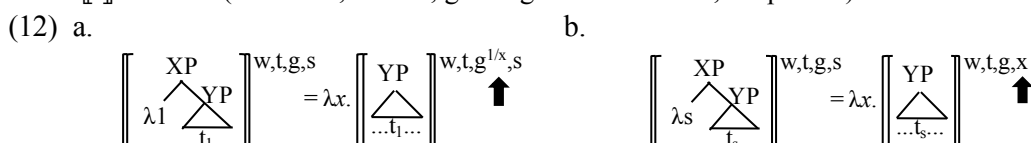
### 3.1 Indexicality and bindability are compatible.

- ✧ The  $\phi$ -features of indexical pronouns are not invisible in LF. Indexicality and bindability are compatible.

### 3.2 Two types of $\lambda$ -abstraction for first person pronouns: $\lambda_1$ (strict) vs. $\lambda_s$ (bound)

- ✧  $\lambda_1$  targets the assignment function  $g$  as in (12)a.  $\lambda_s$  targets the context parameter  $s$  (speaker) as in (12)b.

✓  $[[I]]^{w,t,g,s} = s$  (w=world, t=time, g=assignment function, s=speaker)



- (13) Only I talk to my father.

- a. [IP<sub>1</sub> Only I [IP<sub>2</sub>  $\lambda_1$  t<sub>1</sub> [VP talk to my father]]] *strict*  
 I talk to my father, no one else talks to him.
- b. [IP<sub>1</sub> Only I [IP<sub>2</sub>  $\lambda_s$  t<sub>s</sub> [VP talk to my father]]] *bound*  
 I talk to my father, no one else talks to his/her father.

- (14) If the speaker of (13) is John:

- a.  $\lambda x. [[IP_2 t_1 \dots \text{my} \dots]]^{w,t,g^{1/x}, \text{John}}$ ; my=John *strict*
- b.  $\lambda x. [[IP_2 t_s \dots \text{my} \dots]]^{w,t,g,x}$ ; my=x *bound*

- ✧ What about the number feature? Is it also interpreted on bound pronouns?

## 4 Set theoretic approach (Rullmann 2003)

### 4.1 The number feature on bound pronouns is interpreted.

- ◇ Rullmann (2003) provides an analysis where the plural number feature of *they* is visible in LF, but still interpreted to range over single individuals.

- (15) a. All candidates thought they could win the election.  
 b. Every candidate thought he could win the election.

### 4.2 Plural pronouns range over sets of individuals inclusive of singletons.

- ◇ Assumptions:
  - ✓  $D_e = SG$  (singular entities)  $\cup$  PL (plural entities)
  - ✓  $PL = Pow^+(SG) = Pow(SG) - \{\emptyset\}$ : PL includes singletons and non-singletons
- ◇ The truth conditions of (16)a can be stated as (16)b.
 

(16) a. All candidates thought they could win the election. (= (15)a)  
 b.  $\cup[[\text{candidates}]] \subseteq \cup([\text{candidates}] \cap [[\lambda X [X \text{ thought } X \text{ could win}]]])$
- ◇ Assuming three candidates, a, b and c:
  - ✓  $\cup[[\text{candidates}]] = \cup(Pow^+([\text{candidate}])) = [[\text{candidate}]] = \{a, b, c\}$
  - ✓  $[[\lambda X [X \text{ thought } X \text{ could win}]]] = \{\{a\}, \{b\}, \{c\}\}$ ; only singletons can be true of the predicate.
  - ✓  $[[\text{candidates}]] \cap [[\lambda X [X \text{ thought } X \text{ could win}]]] = Pow^+([\text{candidate}]) \cap [[\lambda X [X \text{ thought } X \text{ could win}]]] = \{\{a\}, \{b\}, \{c\}\}$
  - ✓  $\cup([\text{candidates}] \cap [[\lambda X [X \text{ thought } X \text{ could win}]]]) = \{a, b, c\}$
  - ✓ (16)a is true iff a thought a could win; b thought b could win; and c thought c could win, which is equivalent to (15)b.
- ◇ What about the person feature? Why is (17)b (= (4)) infelicitous while (17)a (= (3)) is not?
 

(17) a. We all think we're the smartest person in the world.  
 b. # We're the smartest person in the world. (Rullmann 2004)

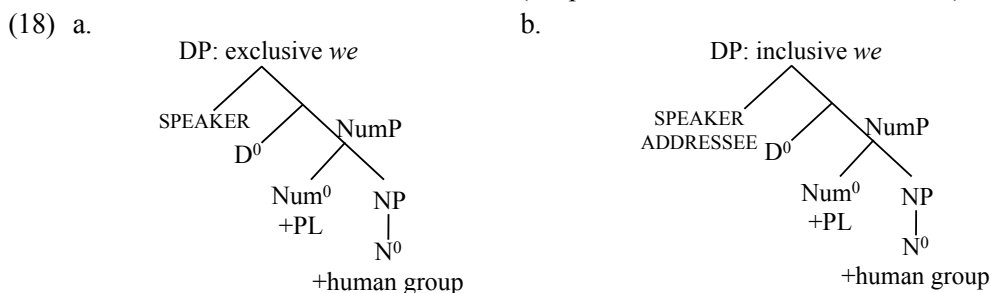
## 5 Proposal

### 5.1 Basic ideas

- ◇ (17)b is infelicitous because it denotes a set of propositions (e.g.,  $a \in we$ . a is the smartest;  $b \in we$ . b is the smartest; and  $c \in we$ . c is the smartest) which contradict one another.
- ◇ (17)a describes a situation in which each individual, a member of *We*, is thinking 'I'm the smartest person in the world.' Multiple speakers (or attitude holders) in distinct contexts may self-ascribe contradictory properties without contradiction.
- ◇ Crucially, in (17)a, a *de se* property is ascribed to each member of *We*.
- ◇ How could we capture such contrast structurally?

### 5.2 The structure of the referential *we*: associative plurality

- ◇ First person plural and second person plural pronouns (nearly) universally have an associative plural semantics (Cysouw 2003, Wechsler 2010, Harbour 2016).
- ◇ The internal structure of the referential *we* (adapted from Vassilieva 2005, 2008)



(See also Déchaine and Wiltschko 2002, 2009; Harley and Ritter 2002)

- ✓ Associative plurals involve two DP-internal nominals:
  - an NP headed by a null non-descriptive noun, specified as [+human]; and
  - a Spec DP nominal, which describes the group by specifying its most salient member.
- ✓ For the exclusive *we*, the most salient member is the speaker of the utterance context. For the inclusive *we*, both the speaker and addressee represent the group.
- ✓ Roughly, the referential *we* is represented as ‘the speaker’s group’ or ‘the speaker and addressee’s group.’
- ◇ The referential *we*, captured as (18), quantifies over sets of individuals.

### 5.3 All personal pronouns quantify over sets of individuals, not over individuals.

- ◇ Personal pronouns narrow down the options of sets of individuals from the power set of all relevant individuals. Singular pronouns=singletons
- ◇ In a hypothetical world with only five people, *i*=speaker, *u*=addressee, and three other members, *o*, *o'* and *o''* (as in Harbour 2016):

(19) $\{\{i\}, \{i, o\}, \{i, o'\}, \{i, o''\}, \{i, o, o'\}, \{i, o, o''\}, \{i, o', o''\}, \{i, o, o', o''\},$	Excl. first
$\{i, u\}, \{i, u, o\}, \{i, u, o'\}, \{i, u, o''\}, \{i, u, o, o'\}, \{i, u, o, o''\}, \{i, u, o', o''\}, \{i, u, o, o', o''\},$	Incl. fist
$\{u\}, \{u, o\}, \{u, o'\}, \{u, o''\}, \{u, o, o'\}, \{u, o, o''\}, \{u, o', o''\}, \{u, o, o', o''\},$	Second
$\{o\}, \{o'\}, \{o''\}, \{o, o'\}, \{o, o''\}, \{o', o''\}, \{o, o', o''\}, \emptyset\}$	Third

- ◇ [[inclusive first]] is NOT [[first]]  $\oplus$  [[second]] nor [[speaker]]  $\oplus$  [[addressee]].

### 5.4 The structure of the bound *we*

#### 5.4.1 On *de se* movement

- ◇ The bound reading of (17)a involves a *de se* attitude: Each of us said “I can will!”
- ◇ It involves a *de se* movement:  $\lambda$ -abstraction for creating a *de se* property out of a proposition denoting TP (Chierchia 1990, Percus and Sauerland 2003ab, Pearson 2013).
- ◇ The complement of an attitude predicate (e.g. *think*, *hope*, *prefer*) denotes a property when it is construed *de se*.

(20) a. John<sub>i</sub> hopes [Op<sub>i</sub> that he<sub>i</sub> will win the election]. (de se)

b. John<sub>i</sub> hopes [that he<sub>i</sub> will win the election]. (de re)

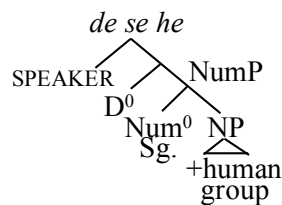
(21) a. hope (John,  $\lambda x$  [x will win the election]) (de se)

b.  $\lambda x$  [hope (x, x will win the election)] (John) (de re)

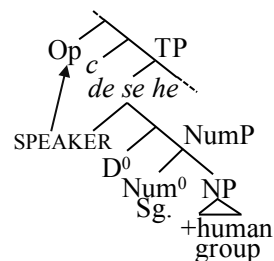
(Based on Chierchia 1990)

- ◇ *De se he* as in (20)a originates with an indexical feature such as the *speaker*, with a structure like (18)a. *De se* movement only applies to the Spec DP indexical feature (speaker) ((22)b) (Matsuda 2019). *De se he* plays the role of the operator (Percus and Sauerland 2003ab).

(22) a.



b.

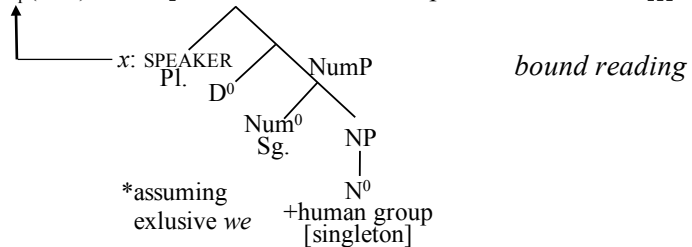


- ◇ English is often analyzed as a non-context shifting language (vs. context shifting languages such as Amharic and Zazaki (Schlenker 2003)). But the notion of *speaker* shifts in this language too; the shift is covert, because the shifted speaker is realized in third person (=de se he) (Matsuda 2019). The *speaker* here is a cover term of various types of attitude holders (e.g. hopers, thinkers).

### 5.4.2 Singular below TP, plural above TP

- ✧ The bound  $we_2$  in (23)(= (17)a) is born with a structure shown under the DP (moved from a vP-internal position). It is similar to the structure of the referential  $we$  (18)a, but the NP is a singleton; the speaker is plural.
- ✧ The sentence describes a *de se* attitude; *de se* movement takes place.

(23)  $[_{CP1} c^* We\ all_1\ think\ [_{CP2} \lambda x_{sp}(we_2)\ \lambda c^l\ c^l\ [_{TP}\ DP\ are\ the\ smartest\ person\ in\ the\ world]]]$



(24)  $[_{CP1} c^* We\ all_1\ think\ [_{CP2} [_{TP}\ we\ (= (18)a)\ are\ smart]]]$  *strict reading*

In (23):

- ✧  $We_2$  is linked to  $we\ all_1$  by predication.  $We_2$  serves the role of an operator; it binds the Spec DP of the embedded subject.
- ✧  $We_2$  is NOT born featureless; it originates with the speaker, singular and +human features, which are NOT deleted at LF.
- ✧  $We_2$  is interpreted as a plural above TP, but as a singular below TP. Person (1st/2nd/3rd) is not specified for the DP under TP; it has the speaker feature, but this feature is also compatible with third person (as in *de se he*).
- ✧  $We_2$  receives its phonological realization via  $c^*$ .

### 5.4.3 On $c$ (context)

- ✧ Indexical expressions need to be anchored to a context to get their values.  $c$  (plausibly in the lower CP domain) represents the relevant context, standardly with some coordinates such as world(w), time(t), speaker(s), and addressee(a) (Schlenker 2003, Bianchi 2003, Anand and Nevins 2004, among others).
- ✧  $c^*$  represents the utterance context;  $c^n$  represents a shifted context.
- ✧ The proposed *de se* movement makes  $c$  a variable.  $c [w, t, s, a] \rightarrow \lambda c [w, t, \underline{x}, a]$
- ✧ In (23),  $we_2$  quantifies over context-speaker pairs (i.e. the speaker of  $c_1$ , the speaker of  $c_2...$ ).  
-> No contradiction

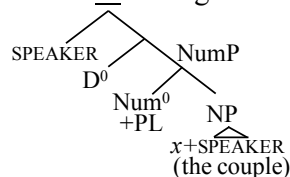
## 6 Generalization

### 6.1 Partial binding

(25) Every woman<sub>I</sub> I<sub>2</sub> date wants us<sub>I+2</sub> to get married. (Rullmann 2004)

- ✧ (25) can be read non-*de se*. -> NO *de se* movement. (See Higginbotham (2010); *John wants himself to eat the hamburger*. -> not obligatorily construed *de se*)
- ✧  $Us$  has the structure of referential  $we$  ((18)a), with a partially bound NP inside.

(26)  $c^* [Every\ woman\ I\ date]\ [\lambda x\ wants\ \underline{us}\ to\ get\ married]$

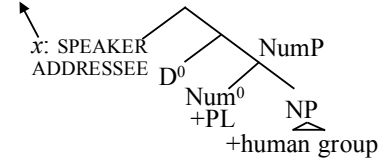


## 6.2 Split binding

(27) Every woman<sub>1</sub> told [her<sub>1</sub> husband]<sub>2</sub> that they<sub>1+2</sub> should invest in the stock market.  
(Rullmann 2003)

- ✧ In the bound reading of (27), every woman said to her husband “we should invest in the stock market.” It describes a *de se* attitude; *De se* movement takes place.

(28)  $c^*$  [Every woman] told [her husband] that [<sub>CP</sub>  $\lambda x$ (they)  $\lambda c^l c^l$  [<sub>TP</sub> [DP] should invest...]]

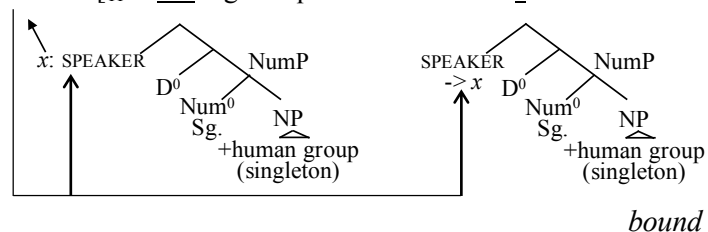


- ✧ The DP ranges over sets of individuals inclusive of the speaker and the addressee of  $c^l$ . The speaker of  $c^l$  corresponds to *Every woman*, and the addressee of  $c^l$  corresponds to *her husband*.
- ✧ The operator  $\lambda x$  is pronounced as *they* in third person because it is NOT bound to either the speaker or the addressee of  $c^*$ .

## 6.3 Only I...

(29) a. Only I got a question that I understood. (=5))

b. [<sub>CP1</sub>  $c^*$  [Only I] [<sub>CP2</sub>  $\lambda x$   $\lambda c^l c^l$  [<sub>TP</sub> DP got a question that I understood...]]]



c. [<sub>CP1</sub>  $c^*$  [Only I] [<sub>CP2</sub>  $\lambda x$  [<sub>TP</sub> x(DP) got a question that I understood...]]]

- ✧ In the bound reading (29)b, the speaker movement creates variable  $c^l$ , where  $c^l = w, t, g, s(->x)$ . All speaker features under  $c^l$  will be bound to the operator  $\lambda x$ .
- ✧ In the strict reading (29)c, the entire subject DP moves; the variable  $c^l$  is not created. The speaker feature of the embedded *I* is directly bound to the speaker coordinate on  $c^*$ .

## 7 Conclusion

Q1: Why is there a contrast in felicitousness between (3) and (4)?

- ✧ *De se* movement of the embedded *we* in (3) creates a context variable. In effect, *we* quantifies over context-speaker pairs. In (4), no such movement takes place.

Q2: What morphosyntactic factors give rise to the two readings of (1)?

- ✧ The embedded *we* in both cases originates with a DP structure with similar features. However, the Spec DP of the bound *we* moves to the CP domain; the referential *we* moves only up to Spec TP.

Q3: Are the  $\phi$ -features on bound pronouns not interpreted at all?

- ✧ The indexical feature (speaker/addressee) and the number feature are interpreted; but the person feature (1st/2nd/3rd) may not. The analysis of the gender feature is left to future research.

Previous literature including Heim (2008), Kratzer (2009) and Sudo (2012) analyze partial/split binding via multiple indexing. However, we may do away with indices if we focus more on the inherent associative nature of indexicals and their internal structures.

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