Number, Person, and Bound Variables

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Introduction

The traditional view

- Number:
[Sg] pronouns range over singular entities
[Pl] pronouns range over plural entities

- Person:
1st & 2nd person pronouns are pure indexicals
[1st] refers to the speaker
[2nd] refers to the addressee

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Problems for the traditional view

- <u>Plural</u> pronouns as bound variables over singular entities:
  All candidates think they can win the elections
  $\forall x(candidate(x) \rightarrow x$ thinks that x can win$)$

- <u>Local</u> pronouns as bound variables ranging over non-speech act participants:
  Only I got a question I understood
  $\forall x(x$ got a question x understood $\rightarrow x$ = speaker$)$

- Plural local pronouns as bound variables:
  We all think we can win the elections
  $\forall x(x \in WE \rightarrow x$ thinks that x can win$)$

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Syntactic approaches to such problems:

- The person/number features on bound-variable pronouns are not semantically interpreted (fake indexicals, fake plurals)

- These features are there for purely syntactic reasons (e.g., agreement)

- Posit a syntactic feature manipulation mechanism
  - Feature checking (e.g. von Stechow 2003)
  - Feature transmission (e.g. Kratzer 1998, 2008; Heim 2005/07)

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Some challenges to syntactic approaches

• Split antecedent cases

Mary told John that they should invest in the stock market.

Every woman told her husband that they should invest in the stock market.

Every man told each of his girlfriends that they were going to get married.

Partee (1989):
John often comes over for Sunday brunch. Whenever someone else comes over too, we (all) end up playing trios. (Otherwise we play duets.)

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Quantified cases (Rullmann 2004):

Every woman I date wants us to get married.
$\forall x[[woman(x) \wedge date(ME,x)] \to x$ wants x and ME to get married]

Whenever I share an apartment with a woman, we end up arguing about household chores.

Each of my ex-wives pretended that we were a happy couple.

Every woman you ever dated still thinks that you (guys) were a happy couple.

[Man speaking to all his ex-wives:]
Each of you expected me to take care of our children.

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• *Each of us*

Each of us thinks we're smart

3rd person singular (*think-s*)
but binds 1st person plural pronoun (*we*)

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Goals of this talk

• Provide a **semantic** account of the bound-variable uses of local pronouns.

• Explain differences between 1st and 2nd person

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1st person: only pl can be bound variable

We all think we're smart
We denken allemaal dat we slim zijn

 # We all think I'm smart
 # We denken allemaal dat ik slim ben

2nd person: both pl and sg can be bound variable (in Dutch)

You (guys) all think you (guys) are smart.
Jullie denken allemaal dat jullie slim zijn

You guys all think you're smart

Jullie denken allemaal dat je slim bent
you(pl) think all that you(sg) smart are
"You guys all think you are smart."

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Not covered in this talk

- **focus-driven cases:**
  Only I got a question I understood (Heim)
  I am the only one who takes care of my children
  (Kratzer)

- **context shifting (monsters)**

- **gender**

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Outline

- number in bound variables

- 1st person bound variables

- 2nd person bound variables

- Why the difference between 1st and 2nd?

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Number in bound variables

What does bound-variable *they* range over?

- **Pluralities/groups**
  Most people who think they have common interests become friends

- **Singular individuals**
  All the candidates think they can become Prime Minister
  (i.e., Rutte thinks that Rutte can become PM, Cohen thinks that Cohen can become PM, Wilders thinks that Wilders can become Prime Minister, etc.)

- **Both at the same time!**
  None of the students think they can solve the problem. 12

Number in bound variables: analysis

Summary of Rullmann (2003)

Basic idea:

- *They* ranges over sets, including singleton sets
- In cases where *they* appears to range over individuals, it really ranges over singleton sets.

  D_e = SING $\cup$ PLUR
  where SING = D and PLUR = Pow$^+$(D)

- Singular pronouns range over members of SING. Plural pronouns range over members of PLUR.

- Singular quantifiers (*every/no student*) quantify over members of SING. Plural quantifiers (*all/no/many/most students)* quantify over members of PLUR.

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- In principle, this predicts number agreement between quantifier and pronouns that it binds.

- Set indices to account for:

  Split antecedents
  Every woman$_1$ told [each of her$_1$ boyfriends]$_2$ that they$_{\{1,2\}}$ should get married

  "Singular" they
  Everyone$_2$ thinks they$_{\{2\}}$ are smart

- This analysis of number can be extended to **local** pronouns:
  [Each of us]$_2$ thinks we$_{\{2\}}$ are smart

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1st person bound variables

- *We* behaves much like *they*

  We all think we're smart
  We all think we can become prime minister

- *each of us*

  Each us thinks we can win the elections

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Each of us

(1) Each of us -- and the Florida Supreme Court has said this -- has a right to control our own body.
"Terri Schiavo's husband allows her family to visit", *CNN.com*, Thursday, October 23, 2003

Google search:
(2) But each of us, as an individual, faces our own edge.
(3) THE BANK TELLER explores the desire within each of us to overcome our isolation and to see and be seen by the other in a relation of authentic connectedness.
(4) Each of us has experienced a strong sense of pride as an educator when a student says that we did an excellent job of teaching and motivating him or her to learn.
(5) Each of us has our own philosophy regarding how to help India.
(6) Each of us must climb our separate mountain To reach at last our own extended view

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Plural quantifiers:

(1) Most of us as men are experts on women, until we marry one.

(2) Most of us have moments when we forget where we left the car keys or forget what we went to the grocery store for.

(3) Meniere's Disease is a progressive, incurable disease, but none of us can predict the progression of the disease in *us*.

(4) Many of us can point to one individual who has changed our life.

(5) If we are honest few of us like the signs of aging in our body.

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Third person pronouns bound by *each of us* etc.

• **singular**

(1) "Each of us bears his own Hell."   (Virgil)

(2) "Are not all of these men who are speaking Galileans? … Yet each of us hears them speaking in his own tongue about the marvels God has accomplished." (Acts 2)

(3) "None of us will ever accomplish anything excellent or commanding except when he listens to this whisper which is heard by him alone." (Ralph Waldo Emerson)

(4) "None of us lives to himself, and none of us dies to himself." (Romans 14:7-9)

• **plural**

(5) From within, each of us emits a light… a fragment of themselves to others.

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Some Dutch data

(1) Elk van ons zou zover moeten komen dat we dat op zijn minst kunnen toegeven.

"Each of us should get to the point where we can at least admit that."

(2) Elk van ons heeft een natuurlijke apotheek (of drugs-store) in ons lichaam.

"Each of us has a natural pharmacy (or drugstore) in our body.

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1st person bound variables: analysis

Recapitulating:

• Floated quantifier or implicit distributive operator:
  – *We each/both/all/Dist think we can win the nomination*

• Quantificational determiner + *of us*:
  – *Each/All/Most/None of us think(s) we can win the nomination*

Basic idea of the analysis:

• The deictic occurrence of *we/us* picks out a set of individuals that includes the speaker

• The bound-variable occurrence of *we* ranges over (possibly singleton) subsets of that set

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- Deictic *we* refers to a set of individuals that stand in some contextually salient relation R_c to the speaker

- Nunberg (1993): indexicals have
  - a **deictic** component (in this case, the speaker)
  - a **relational** component (in this case, R_c)
  - a **classificatory** component (e.g., animacy, gender)

- R_c must always be reflexive (e.g., "be friends with")

- **Proposal:**

  Variable *we* ranges over non-empty sets of entities that stand in relation R_c to the speaker.
  Note that these sets are all subsets of the denotation of deictic *we*.

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Formalization:

- Standard semantics for *I* (cf. Kaplan):
  $\| I_i \|^{c,g} = g(i)$ if $g(i)=speaker(c)$ (otherwise undefined)

- Proposed semantics for *we*:
  $\| we_i \|^{c,g} = g(i)$ if $g(i) \in PLUR$ and
  $\quad \forall x \in g(i): R_c(x,speaker(c))$ (otherwise undefined)

Additional pragmatic requirement:

- When *we* is **free** it picks out the **maximal** set that meets its presupposition

- As R_c is reflexive, this maximal set includes the speaker

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Preventing overgeneration

[Each of my friends]$_5$ loves our$_{\{5\}}$ mother

- Why couldn't we just pick the right R_c?(e.g., "is a friend of")!

- But note that in that case the presupposition of *our* is satisfied "accidentally". It depends on the denotation of the noun *friend* and the particular choice of R_c.

- The presuppositions of grammatical features should be satisfied in every model that respects the semantics of the functional items.

The speaker loves my mother

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But then again….

(1) Most Muslims have no clue what we're saying when we're reciting the Koran in Arabic. (Irshad Manji)

(2) Those who still adore the game – and there are millions of us – can only look at the stick work, the constant interference, the stultifying coaching strategies, the Michelin Man goaltenders and the silly regulations that persist and scratch our collective heads.

(3) We owe them, and their children, and our own, the most enduring monument we can build: a world of liberty and security made possible by the way America leads, and by the way Americans lead our lives. (George W. Bush)

(4) Linguists have now hammered many generations of American students with our contrary opinions about normal people's linguistic beliefs, without notable success.

(5) Thanks to those who have already made your card. (e-mail message)

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Binding by implicit wide-scope quantifier

De mensen die op ons gestemd hebben hoopten dat we premier zouden worden.

The people who voted for us hoped that we would become the PM.

$\forall x$ ($x \in$ WE $\rightarrow$ the people who voted for x hoped that x would become PM)

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Why *I* can't be a bound variable
(…except for focus cases)

[Each of us]$_8$ thinks I$_8$'m smart

- Semantics for *I*:
  $\| I_i \|^{c,g}$ = g(i)   if   g(i)=speaker(c)   (otherwise undefined)

- *I* does not involve R_c. It can only refer to the speaker.

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2nd person bound variables

With special thanks to Kees de Schepper!

- In Dutch, both plural *jullie* and singular *je* can be bound variables.

  Plural:
  Jullie denken allemaal dat jullie slim zijn
  you(pl) think all that you(pl) smart are
  "You guys all think you guys are smart."

  Singular:
  Jullie denken allemaal dat je slim bent
  you(pl) think all that you(sg) smart are
  "You guys all think you are smart."

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	full	reduced
sg	*jij/jou/jouw*	*je*
pl	*jullie*	??

- **Semantically** *je* functions as the reduced counterpart of plural *jullie*, even though **morphosyntactically** it is singular.

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Evidence from non-bound-variable cases:

- In isolation, singular interpretation strongly preferred:

  Je bent te laat.
  "You're too late"

- But when it has *jullie* as an antecedent, it can be interpreted as plural:

  Jullie hebben het steeds uitgesteld, en nu ben je te laat.
  "You guys kept postponing it, and now you are too late"

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- Can the **full** sg 2nd pronouns (*jij / jou / jouw*) get a bound-variable interpretation?

- Note that bound-variables generally prefer to be weak ➔ need to create a contrast

  [Context: question in party leaders' debate]
  Ik heb een hypothetisch scenario voor jullie: stel, JOUW partij wordt straks de grootste. Vinden jullie dan dat JIJ de premier moet worden?				(Kees de Schepper)

  "I have a hypothetical scenario for you guys: suppose YOUR party is going to win the most seats. Do you guys think that YOU should become the prime minister?"

Judgement not very clear….

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Real-life example (found by Kees):

"als ik een soldaat zou zijn [...] dan had ik ze ALLEMAAL afgeschoten. als ik dit had gekund, denken jullie dat jij dit niet had gedaan"

"If I were a soldier […] then I would have shot them all. If I had been able to do this, do you (pl.) think you (sg.) would not have done this?"

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Why is the 2nd person different?

Historical development

- *jij* originally plural

- replaced the original 2nd person singular *du*

- *jullie < je lui* "you people" developed as the new plural

- compare English *you guys*

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jullie < je lui ("you guys")

- Disambiguation as plural only necessary for the first occurrence of the pronoun

- In English, repeating *you guys* still seems awkward:

  ?*You guys said you guys would be here*
   You guys said you would be here

   Jullie zeiden dat jullie zouden komen
   Jullie zeiden dat je zou komen

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A difference between English and Dutch

- *You* is **morphosyntactically** underspecified (or ambiguous) between sg and pl
- *Jij / je* is always **morphosyntactically** singular

Ik lach	*I laugh*
Jij lach-t	*You laugh*
Hij/Zij/Het lach-t	*He/She/It laugh-s*
Wij lach-en	*We laugh*
Jullie lach-en	*You laugh*
Zij lach-en	*They laugh*

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Additional factors
to explain why 2nd person sg is more prone to a bound-variable interpretation than 1st person sg.

- 2nd person more easily shiftable within the same utterance:

  I want to see you, you, and you
  #*You have to talk to me, me, and me*

- Stephen Wechsler's observation yesterday: a singular 2nd person pronoun can be used with multiple addressees

  [teacher to class:]
  Schrijf je naam op het papier
  "Write your (sg.) name on the paper"

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- Generic use of 2nd person

  If you win the elections, you will become prime minister

  Ambiguous:

  - contextually determined set
  $\forall x(x \in$ YOU-GUYS $\rightarrow$ if x wins the elections, x will become PM)

  - generic
  GEN(x) (if x wins the elections, x will become PM)

  The two readings are quite similar
  (even more so if we adopt Sarah Zobel's analysis of generic *you*)

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