Semantic building blocks of reference

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Definite expressions

PRONOUNS	DEFINITES	DEMONSTRATIVES
flexible	unique	rigid
bound	familiar	anti-unique

Definite expressions

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flexible	unique	rigid
bound	familiar	anti-unique

- Different mechanisms assumed:

(1) $[\![\text{she}_i]\!]^g$ = g(i), if g(i) is feminine

(2) [[the linguist]] = ιx. linguist(x)

(3) $[\![\text{that linguist}_{\rightarrow}]\!]$ =

Definite expressions

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flexible	unique	rigid
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Shared building blocks (generally assumed):

- uniqueness
- familiarity
- existence
- content

Definite expressions

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flexible	unique	rigid
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Shared building blocks, different mechanisms:

	$[\![\text{she}_i]\!]^g$	$[\![\text{the linguist}]\!]$	$[\![\text{that linguist}_{\rightarrow}]\!]$
uniqueness	g(i)	ι	$\rightarrow$
familiarity	g(i)	(g(i))	$\rightarrow$
existence	g(i)	ι	$\rightarrow$
content	ϕ presupposed	NP	NP + $\rightarrow$

Definite expressions

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Alternatives:

- PRONOUNS as (elided) DEF [Bi and Jenks 2019; Elbourne 2005; Heim 1990; Neale 1988]
- PRONOUNS as short DEF [von Heusinger 2002; Postal 1966; Royer 2022; Schlenker 2005]
- DEM as marked DEF [Dayal and Jiang 2021; Elbourne 2008; King 2001; Wolter 2006]
- DEF carrying indices like PRONOUNS [Heim 1983; Schwarz 2009]
- PRONOUNS, DEF, DEM with uniform structure [Elbourne 2008; Roberts 2003]

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This talk: A variant of the uniform view

This talk

A different division of labor

Part 1

- DEF vs. DEM: different mechanisms
  - DEF takes one argument (unary)
  - DEM takes two different arguments (binary)

	⟦the linguist⟧	⟦that linguist$_{\rightarrow}$⟧
mechanism	unary	binary
content	NP	NP + $\rightarrow$

This talk

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mechanism	unary	binary
content	NP	NP + $\rightarrow$

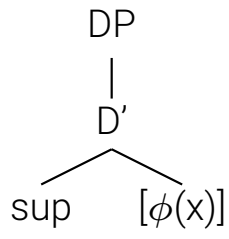
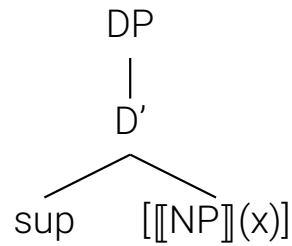
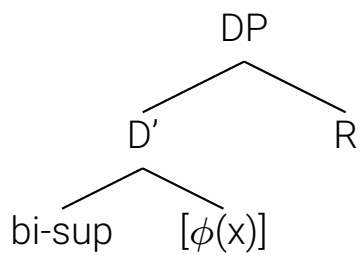
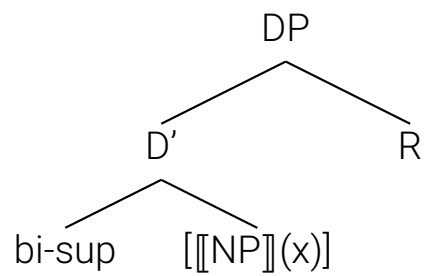
Part 2

- PRO vs. DEF: same unary mechanism, but ϕ instead of NP

	⟦she$_i$⟧^{g}	⟦the linguist⟧
mechanism	unary	
content	ϕ	NP

This talk

Part 1+2 [±binary] [±NP]

	ϕ(x)	**[[NP]](x)**
[unary]	 *it*	 *the book*
[binary]	 *that*	 *that book*

Outline

PART 1: DEM vs. DEF

- DEM as binary definites
- deriving anti-uniqueness

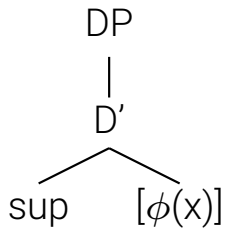
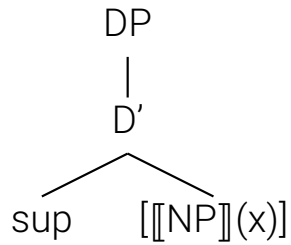
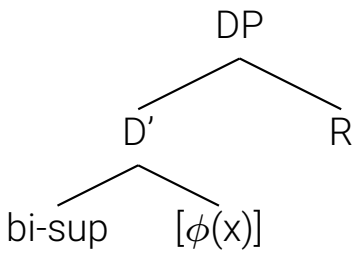
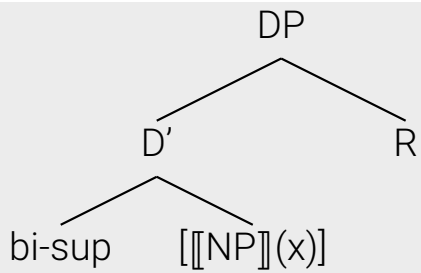
PART 2: DEF vs. PRONOUNS

- ϕ and NP similarities
- PRONOUN as {DEF,DEM} with ϕ instead of NP

PART 3: Putting the building blocks together

DEM vs. DEF

Demonstratives

	ϕ**(x)**	⟦**NP**⟧**(x)**
[unary]		
	it	*the book*
[binary]		
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Demonstratives

Demonstrative description *that F*

- deictic uses: contains a **linker** to an actual world entity

  (4) that linguist$_{\rightarrow}$

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- linker replaced with something else

  (5) that linguist behind the door

  (6) that hero who kills the dragon [Wolter 2006]

  (7) Sol that linguist [possible in Mandarin, Korean; Yu 2023]

Demonstratives

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- linker covert; anaphoric

  (8) I met a linguist$_i$. That linguist$_i$ looked happy.

Demonstratives as special definites

Demonstratives vs. Definites

- Demonstratives overlap with definites [Cho 2016; Dayal and Jiang 2021; Elbourne 2008; Himmelmann 1996; Jenks 2015, 2018; Kang 2002; King 2001; Lee 1992; Nowak 2019; Roberts 2002; Schwarz 2009; Wolter 2006, a.o.]

  (9) I met a linguist. {The / that} linguist looked happy.

- Analysis of demonstratives with respect to how they compare with *the* or ι

#DEM, DEF

(10) {#That / The} universe

(11) a. I met the author of *Waverley*.
b. #I met that author of *Waverley*. [Nowak 2019]

Demonstratives as special definites

Often, demonstratives analyzed as marked definites: *#that universe*

⟦DEM⟧ = ⟦DEF⟧ + **further restriction**

anti-uniqueness [Dayal and Jiang 2021]

proper restriction [Nowak 2019]

Demonstratives as special definites

Often, demonstratives analyzed as marked definites: *#that universe*

⟦DEM⟧ = ⟦DEF⟧ + **further restriction**
anti-uniqueness [Dayal and Jiang 2021]
proper restriction [Nowak 2019]

undergeneration issues
[Ahn 2022; Blumberg 2020; Yu 2023]

(12) Look at that oddly-shaped disc drifting in the air right now!

(13) (I don't know if there are other cars, but)
That car$_{\rightarrow}$ looks expensive. [Blumberg 2020]

- too strong to encode anti-uniqueness as presuppositions
- where does anti-uniqueness come from? additional argument

Demonstratives as binary definites

Demonstratives carry something else

- Wolter 2003: ‘the referent of the definite description is determined on the basis of its descriptive content alone, while the referent of a demonstrative description is not.’ (p.20)
- Ebert 2017: for demonstratives, both gesture and description are at-issue
- Demonstratives carry an additional restriction
  [King 2001, Wolter 2003, Elbourne 2005, Nowak 2019, a.o.]:

(14) $[\![\text{the F}]\!] = \iota x.\ F(x)$

(15) $[\![\text{that F}]\!] = \iota x.\ F(x) \wedge G(x)$

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(15) $[\![\text{that F}]\!] = \iota x.\ F(x) \wedge G(x)$

[Q] What is this additional element?
[A] Deixis! a linker to the actual world

Demonstratives and linkers

Demonstratives carry a linker to the actual world

Not just the regular context-dependence, but...

- ‘clearly inbuilt contextual variables’ [Levinson 2004]
- a demonstration [Roberts 2002]
- something that is fixed to context rigidly [Kaplan 1989]

(16) If I visit Korea next year, I will talk to that guy[→ ].

Demonstratives as modality linkers

Demonstratives carry a linker to the actual world

Deictic information becomes **restrictive** and **at-issue** [Ebert 2019; Ebert et al. 2020]

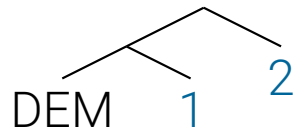
(17) a. #[The computer]$_{\rightarrow A}$ is new, but [the computer]$_{\rightarrow B}$ is old.
b. [That computer]$_{\rightarrow A}$ is new, but [that computer]$_{\rightarrow B}$ is old.

Same with depictions

(18) QUD: I have two tables, one rectangular and one circular.
Which table did you see?
a. #I saw the[circle] table, but not the[rectangular] table.
b. I saw this[circle] table, but not this[rectangular] table.

Implementation

Demonstrative as an operator linking description and linker [Ahn 2022]



- 1: the description: NP, ϕ-features
- 2: content from actual world (pointing, gesture, etc.)

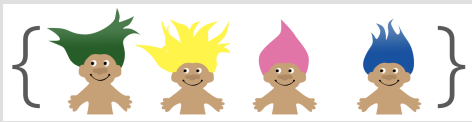
Why separate the two?

- Gestural information often does not enter at-issue, restrictive content
  [Ebert et al. 2020; Esipova 2018, 2019; Schlenker 2015; Zlogar and Davidson 2018]
- General restriction against freely combining descriptive content with iconic content [Davidson 2023]

Demonstratives as modality linkers

Description vs. depiction

[Davidson 2023]

description	**depiction**
partitioning of possible worlds ⟦troll⟧ = {x|x is a troll} 	about a particular event or referent 'I found a troll$_{[\text{pointy-hair-gesture}]}$.' 

Demonstratives as modality linkers

Description vs. depiction [Davidson 2023]

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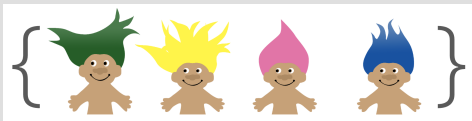
partitioning of possible worlds ⟦troll⟧ = {x|x is a troll} 	about a particular event or referent 'I found a troll$_{[\text{pointy-hair-gesture}]}$.' 

restrictions on depiction

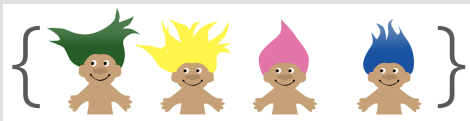
- Depictive content is incompatible with partitioning semantics:

(19) I didn't see trolls.

(20) ?I didn't see trolls$_{[\text{pointy-hair-gesture}]}$. [related work: Zlogar and Davidson 2018]

Demonstratives as modality linkers

Description vs. depiction [Davidson 2023]

description	**depiction**
partitioning of possible worlds ⟦troll⟧ = {x|x is a troll}	about a particular event or referent 'I found a troll$_{[\text{pointy-hair-gesture}]}$.'
	

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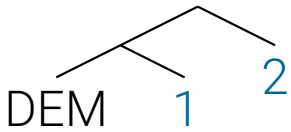
compare with a descriptive/linguistic modifier:

(21) I didn't see trolls with a pointy hair.

Demonstratives as modality linkers

Demonstrative as an operator linking description and linker



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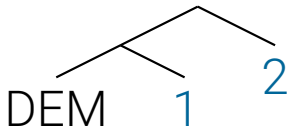

- 1: the description: NP, ϕ-features
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$\rightarrow$ allows depictive content to compose with the descriptive content:

(22) ?I didn't see trolls$_{[\text{pointy-hair-gesture}]}$

(23) I didn't see trolls like this$_{[\text{pointy-hair-gesture}]}$.

(24) I didn't see these$_{[\text{pointy-hair-gesture}]}$ trolls.

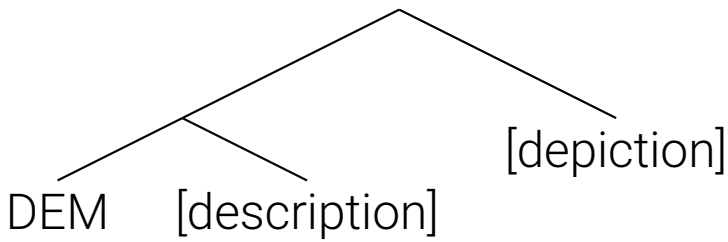
Demonstratives as modality linkers

ONLY demonstratives link description with depiction

Unique Modality Hypothesis (Ahn 2022): Semantic composition across modalities banned without a lexical operator

*modality: not spoken vs. signed; but descriptive vs. depictive

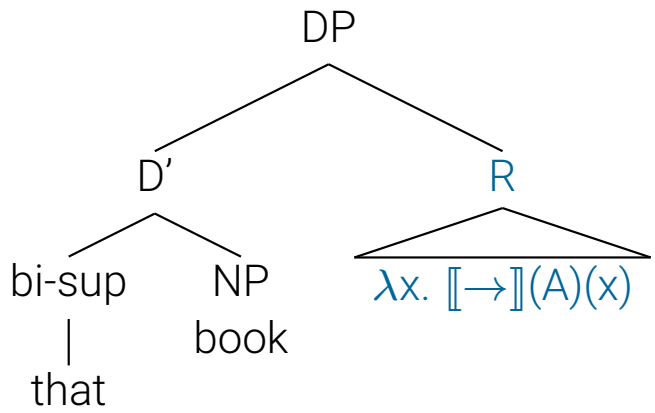
- DEM: lexical operator



(25) $[\![\text{bi-sup}]\!] = \lambda P.\ \lambda R_{\gamma}.\ \iota x{:}\forall y\ [P(y) \wedge R_{\gamma}(y) \leftrightarrow y \sqsubseteq x]$

Deictic use

⟦that book$_{\rightarrow A}$⟧ =



bi-sup [λx. entity(x) ∧ ⟦book⟧(x)] [λx. ⟦→⟧(A)(x)]

- ⟦→⟧ = λy. λx. R_1(x,y)
  - *y*: location (demonstratum)
  - R_1: free variable over relations between *x* and *y* (identical to, looks like, located in, sounds like, ...)

‘the maximal entity *x* that is a book and is located at A’

*[Ahn 2022] Rigidity as an epiphenomenon (***A*** fixed in the utterance context)

Non-deictic uses

What about non-deictic, non-depictive uses of demonstratives?

- R still picks out a particular

(26) that linguist behind the door — y=location

(27) that hero who kills the dragon — $y=\iota x.\text{k-t-d}(x)$

(28) Sol that linguist — y=Sol

$$[\![\rightarrow]\!] = \lambda y.\lambda x.R_1(x,y)$$

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Treating non-deictic demonstratives as still requiring a particular-selecting *R*

- DEM: two pieces of information needed to resolve the referent

DESCRIPTION + **DEPICTION**

- DEPICTION can be replaced with words, if particular-selecting

DESCRIPTION + $_{\text{DESCRIPTION-OF}}$**DEPICTION**

Deriving anti-uniqueness

Retrievability [Roberts 2010]

In order for an utterance to be a rational, cooperative act in a discourse interaction D, it must be reasonable for the speaker to expect that the addressee can grasp the speaker's intended meaning in so-uttering in D.

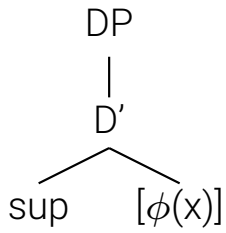
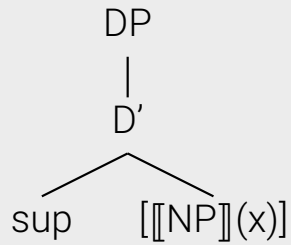
Minimize Restrictors! [Schlenker 2005]
A definite description *the A B* is deviant if *A* is redundant, i.e. if:
(i) *the B* is grammatical and has the same denotation as *the A B*
(ii) *A* does not serve another purpose

*my tall brother

Use of a DEM suggests that:

- the partition-based search for the referent is not sufficient
- a particular-selecting depiction is needed
- Implication: There is another entity that meets the NP description

Definites

	ϕ**(x)**	⟦**NP**⟧**(x)**
[unary]		
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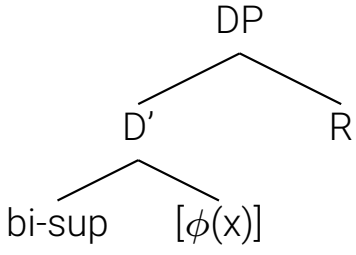
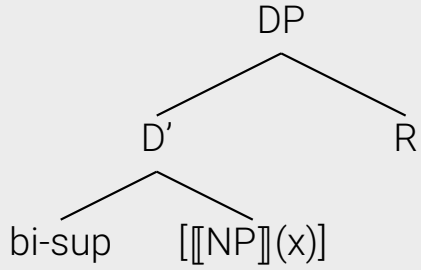
[binary]		
	that	*that book*

- DEF is a DEM without a particular-selecting depiction

Towards a unary definite

DEM vs. DEF in retrievability

- DEM: two pieces of information needed to resolve the referent

DESCRIPTION + **DEPICTION**

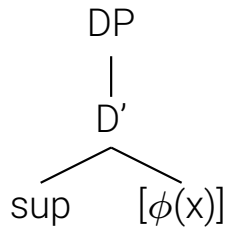
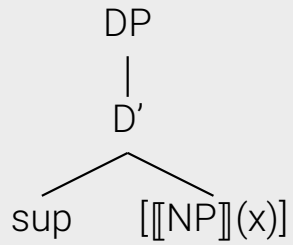
- DEF: only DESCRIPTION would do (with domain restriction)

DESCRIPTION + ~~DEPICTION~~

Parametric difference in marking unary definites

- Every language marks binary definites [Diessel 1999; Levinson 2018, a.o.]
- Some languages mark unary definites overtly (*the* in English)

Interim summary: DEM vs. DEF

	ϕ(x)	⟦NP⟧(x)
[unary]		
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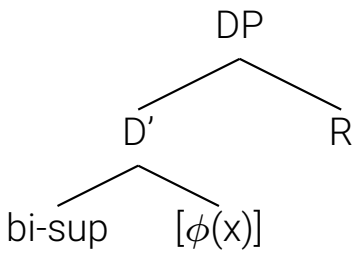
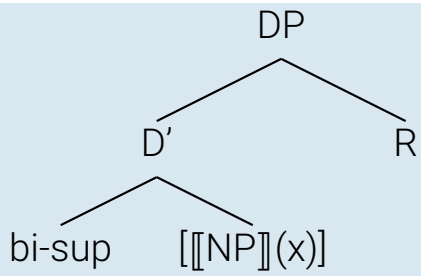
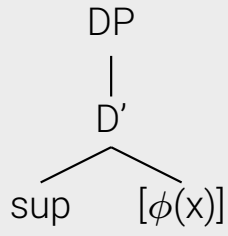
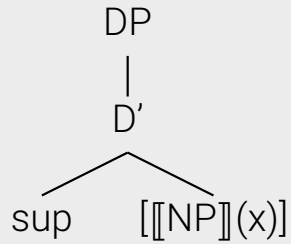
[binary]		
	that	*that book*

- DEM has one more argument than DEF: DESCRIPTION and DEPICTION
- Accounts for: composition with deixis, anti-uniqueness

DEFINITES and PRONOUNS

DEF vs. PRONOUNS

	ϕ**(x)**	⟦**NP**⟧**(x)**
[unary]		
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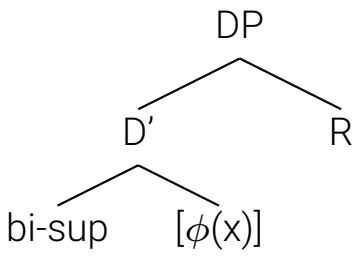
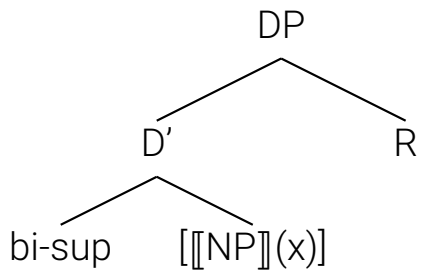
[binary]		
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pronoun vs. description

Pronouns as descriptions

- D-Type theories
  [Elbourne 2005; Evans 1980; Heim 1990; Neale 1988]

(29) $[\![\text{she}]\!] = [\![\text{the NP}]\!] = \iota x.[\![\text{NP}]\!](x)$ [Elbourne 2005]

pronoun vs. description

Pronouns as descriptions

- D-Type theories
  [Elbourne 2005; Evans 1980; Heim 1990; Neale 1988]

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Ahn 2019: D-2

A pronoun only carries semantic ϕ-features as restrictions

(30) $[\![\text{the linguist}]\!] = \sup [\phi(x) \wedge [\![\text{linguist}]\!](x)]$ the maximal linguist entity

(31) $[\![\text{she}]\!] = \sup [\phi(x)]$ the maximal [+fem,+sg] entity

pronoun vs. description

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But aren't ϕ-features presupposed?

ϕ = NP

ϕ as restrictions in other works

- [Esipova 2018] Semantic ϕ-features treated as <e,t> modifiers
- [Postal 1966] Pronouns as descriptions that carry features like [+masc,+3rd,+refl] instead of NPs in deep structure
- [von Heusinger 2002] *she* as 'the most salient one of the set of female individuals'

ϕ = NP

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- [von Heusinger 2002] *she* as 'the most salient one of the set of female individuals'

In order to detect ϕ = NP, we need to separate entity* and descriptive uses.

- Pronouns often discussed for their entity uses
- DEF often discussed for their descriptive uses

entity uses *('referential')
not asserted, projected,
not-at-issue

descriptive uses
asserted, accommodated,
at-issue

ϕ vs. NP: entity uses

Backgrounded nature of ϕ [Sudo 2012]

1. Not straightforwardly rejectable

(32) a. She is drinking coffee.
b. Every kid drank her coffee. No that's not true

ϕ vs. NP: entity uses

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(32) a. She is drinking coffee.
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2. Not negated by exhaustive operators

(33) Exactly one student criticized herself.

- means:
  - Only one student criticized herself
  - That student is female
  - No one else (female or not) criticized self

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  - That student is female
  - No one else (female or not) criticized self

3. Projected under propositional attitudes

(34) Kate said that John attended a talk by some phonologist. We have no clue whether or not she's telling us the truth. Kate believes that John criticized her.

- The phonologist is female.

ϕ vs. NP: entity uses

Backgrounded nature of NP in referential DEF

1. Not straightforwardly rejectable

(35) a. The linguist is drinking coffee.
b. Every linguist drank the coffee that I made for the linguist.

ϕ vs. NP: entity uses

Backgrounded nature of NP in referential DEF

1. Not straightforwardly rejectable

   (35) a. The linguist is drinking coffee.
   b. Every linguist drank the coffee that I made for the linguist.

2. Not negated by exhaustive operators

   (36) (Did anyone from the conference complain about the poster dimension?)
   Only one student complained that the poster dimensions provided by the conference didn't fit the student's printer.

   - No one else complained about... their (student or not) printer

ϕ vs. NP: entity uses

Backgrounded nature of NP in referential DEF

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   - No one else complained about... their (student or not) printer

3. Projected under propositional attitudes

   (37) Kate said that John attended a talk by some linguist. We have no clue whether or not she's telling us the truth. Kate believes that John criticized the phonologist.

   - The linguist is a phonologist.

ϕ vs. NP: descriptive uses

Restrictive uses of NP

(38) In a QP defense, the student presents and the advisor asks questions.

ϕ vs. NP: descriptive uses

Restrictive uses of NP

(38) In a QP defense, the student presents and the advisor asks questions.

Restrictive uses of ϕ

(39) I saw two people yesterday. HE was holding a bus ticket and SHE was holding a plane ticket.

(40) In every 1960s marriage it was understood that he should take out the garbage and she should wash the dishes. [Roberts 2023 LSA]

- called bridging uses in Roberts 2023 [Clark 1975]

  (41) See that car? There's a statue on the dashboard.

ϕ vs. NP: descriptive uses

Another place where ϕ is asserted

(42) I don't know HER personally, because he is a man. [Sudo 2012]

- Described in terms of local accommodation of the ϕ-presupposition

  (43) Rafael did not stop using Mac, because he never owned a Mac.

  a. canceling the projected presupposition of *stop*: that Rafael owned a Mac

ϕ vs. NP: descriptive uses

Another place where ϕ is asserted

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  a. canceling the projected presupposition of *stop*: that Rafael owned a Mac

Similar pattern for NP

(44) I don't know the LINGUIST personally, because she is an astronomer.

- For both pronouns and DEF, prosodic marking is necessary

ϕ vs. NP summary

ϕ and NP show same interpretative properties:

1. **in entity uses:** not asserted, projected, not-at-issue
2. **in descriptive uses:** asserted, at-issue

Implication

ϕ in a pronoun and an NP in a definite description are fed into the same mechanism in unary uses

unary	⟦she⟧	⟦the linguist⟧
uniqueness familiarity existence	one underlying mechanism	
content	ϕ	NP restriction

Part 1+2: Summary

PRO vs. DEF vs. DEM recast as a 2x2 difference

- They only differ in content, the meaning building blocks (ϕ, NP, R)

	ϕ(x)	**⟦NP⟧(x)**
[unary]	ϕ	⟦NP⟧
	it	*the book*
[binary]	ϕ + R	⟦NP⟧ + R
	that	*that book*

[Q] How do we get from the building blocks (ϕ, NP, R) to the final denotation?

Part 3: Analysis

Closer look at the contribution

Part 1+2: ϕ, NP, and R treated as restrictions to {sup, ι, ..}

	ϕ(x)	**⟦NP⟧(x)**
[unary]	sup[ϕ(x)] *it*	sup[⟦NP⟧(x)] *the book*
[binary]	bi-sup[ϕ(x)][R(x)] *that*	bi-sup[⟦NP⟧(x)][R(x)] *that book*

Debate on the underlying mechanism [Elbourne 2005; Fara 2001; Frege 1892; Heim 1983; von Heusinger 2002; Köpping 2020; Roberts 2003; Russell 1905; Schwarz 2009; Strawson 1950, a.o.]

- unique vs. familiarity [Elbourne 2013; Heim 1983; Roberts 2003; Schwarz 2009]
- issues with existence [Coppock and Beaver 2015], uniqueness [von Heusinger 2002]

Closer look at the contribution

Part 1+2: ϕ, NP, and R treated as restrictions to {sup, ι, ..}

	ϕ(x)	**⟦NP⟧(x)**
[unary]	sup[ϕ(x)] *it*	sup[⟦NP⟧(x)] *the book*
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Role of referential *the*: add the NP inference to a given entity? Part 3

Sketch of an analysis

The NP inference

- Just as a pronoun has a gender inference:

(45) Talking about Sol, mistaking him to be a woman:
?She is tall.

- asserted: g(i) is tall
- not asserted: g(i) is female — presupposition: g(i) is female

- A definite description has an NP inference:

(46) At a party, mistaking someone to be drinking a martini:
?The man drinking a martini is tall. [Donnellan 1966; Sudo 2012]

- asserted: g(i) is tall
- not asserted: g(i) is a man drinking a martini — presupposition: ⟦NP⟧(g(i))
instead of ∃ or ∃!

Sketch of an analysis

(47) $[\![\text{she}_i]\!]^{w,g} = \iota x{:}\phi(x).x=g(i)$

(48) $[\![\text{the NP}_i]\!]^{w,g} = \iota x{:}\text{NP}(x).x=g(i)$

Unary definites add {ϕ, NP} inferences to a given entity

- context (weak familiarity [Roberts 2003]; unique definites [Schwarz 2009])
- anaphoric (strong familiarity [Roberts 2003]; anaphoric definites [Schwarz 2009])
- predicates introduce discourse referents [Chierchia 2020]

Inspirations from previous works

- Heim 1983: a definite NP with index ***n*** needs requires that ***n*** $\in$Dom(F)
- Ebert 2017: for a purely referential definite, NP is not-at-issue
- Gutzmann and McCready 2014: NP in a referential definite description adds a 'use-condition', not a 'truth-condition'

Unary vs. Binary definites

Unary vs. Binary definites

- Unary definites involve **given** (contextually-unique, familiar) entities
- Binary definites **identify/define** entities using R

1. DEM can refer to new entities in the actual world

		ϕ	NP
unary	g(i)	$[\![\text{she}_i]\!]^{w,g}$ $\iota x{:}\phi(x).x=g(i)$	$[\![\text{the NP}_i]\!]^{w,g}$ $\iota x{:}\text{NP}(x).x=g(i)$
binary	$\rightarrow$	$[\![\text{she}_{\rightarrow}]\!]^{w,g}$ $\lambda y.\iota x{:}\phi(x).R(x,y)$	$[\![\text{the NP}_{\rightarrow}]\!]^{w,g}$ $\lambda y.\iota x{:}\text{NP}(x).R(x,y)$

- **Not* subsuming deixis under anaphora
  - unary pronouns and definites can be anaphoric but not deictic

Unary vs. Binary definites

2. DEM can define the at-issue, relevant property in R

When the linker hosts a relative clause, it defines who the intended referent is

(49) [THAT hero] [who KILLS the dragon] [will INHERIT the kingdom] [Wolter 2003]

(50) Those who read never fail. [similar ex in Elbourne 2013]
(compare with *Those people who read never fail*)

- What is at-issue is not *who* but the content of R

Unary vs. Binary definites

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- What is at-issue is not *who* but the content of R

Correlatives

- Related phenomena in other languages: **correlatives**
- Bhatt 2003: Correlatives require demonstratives

(51) [jo sale-par hai] [Maya us CD-ko khari:d-egi:]
Rel sale-on be.Prs Maya.F Dem CD-Acc buy-Fut.F
'Maya will buy the CD that is on sale.'
(Lit. 'What is on sale, Maya will buy that CD.') [Hindi]

Deriving uniqueness

- Uniqueness, familiarity, and existence subsumed under g(i) for DEF

	⟦she⟧	⟦the linguist⟧	⟦that linguist$_{\rightarrow}$⟧
uniqueness familiarity existence		g(i)	$\rightarrow$
content	(ϕ)	(NP)	(NP)

- For DEM, $\rightarrow$ (λy.ιx.R(x,y)) defines a new entity
  - but ϕ and NP are backgrounded like unary definites

Deriving anti-uniqueness 2

This view allows for a more nuanced account of anti-uniqueness

- If R has content ($\rightarrow$ or RC), R has a {linking, defining} function, so no anti-uniqueness effects
- If R is covert/anaphoric: overlaps with *the*, hence anti-uniqueness derived pragmatically through *MR!*

Part 3: Summary

Arguments

1. ϕ and NP are presupposed of a given entity
2. If unary, the entity is given; if binary, the entity can be defined with R

Consequences

- accounts for the backgrounded-ness of NP [Gutzmann and McCready 2014]
- captures at-issueness difference between definites and demonstratives
- a more nuanced anti-uniqueness derivation

Conclusion

Summary

1 2x2 Definite space defined by unary vs. binary and content

- DEM is binary and takes description and linker
- DEF is unary and takes description only
- PRONOUN has ϕ instead of NP for description

2 Underlying mechanism

- ϕ and NP make the same contribution (backgrounded)
- binary definites allow composition with actual world content

3 Implications

- Minimal contribution of *the*: all it does is add an NP inference (no existence or uniqueness requirements)
- Deriving anti-uniqueness: Retrievability; *MR!*

Going back to descriptive uses

The analysis so far only accounts for the entity uses.

If ϕ and NP target given entities, how do we account for descriptive uses?

(52) In any department, the chair will do the most emailing.

(53) She didn't give the only invited talk. [Coppock and Beaver 2015]

1. Treat it like local accommodation (similar to Sudo's treatment of accommodated ϕ)
2. Separate entities and kinds → Current project

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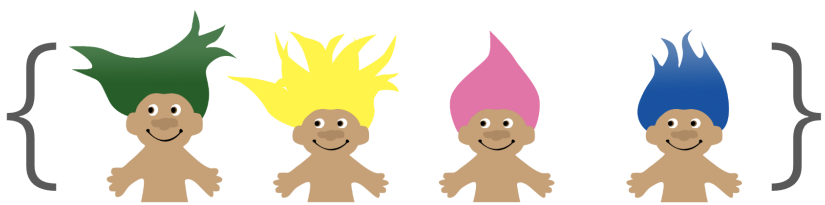

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