The role of deixis in reference

Dorothy Ahn
Rutgers University
dorothy.ahn@rutgers.edu

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www.dorothyahn.com/handouts

The role of deixis in reference

1. Deixis and demonstratives

- determining the role of demonstratives in reference

2. Demonstratives and kinds

- the locus of the contribution

Deixis and demontratives

Two approaches

Studies on deixis, gesture:
DEIXIS > ANAPHORA

- deixis as ontogenetically prior to grammatical elements [Butterworth 1998; Diessel 1999; Levinson 2004]
- deictic expressions serve as source for non-deictic expressions [Diessel 2013]
- deriving ⟦the⟧ from deixis [Thorne 1972]
- anaphora secondary to deixis [Lyons 1975]

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Semantic theories:
⟦**the**⟧ > ⟦**that**⟧

- *the* is default
- *that* is marked: *the* plus markedness constraint (anti-uniqueness, etc.) [Dayal and Jiang 2023; Nowak 2019; Wolter 2006, a.o.]
- deixis subsumed under anaphora [Heim and Kratzer 1998; Levinson 2004]

THAT first

1. Deixis (and demonstratives) as the default condition
2. Semantic/pragmatic extension to the rest of definite expressions

Let's start with **DEMONSTRATIVES**

Approach: looking at **REFERENCE**

- well-studied, with cross-linguistic considerations
- discussion of anaphora abundant [Heim 1983; Roberts 2003; Schwarz 2009, a.o.]
- less studied: interaction with deixis [Ebert 2019; Ebert et al. 2020; Grosz 2019]

Reference: [form] + [linker]



[description]

Reference

Reference: [form] + [linker]



[description]

Reference

Reference requires 2 elements:
form and linker

- form: grammatical description (noun, ϕ-information, etc.)
- linker: primarily deictic

Definite space defined by overt marking of form and linker

Demonstratives require both!

Definite expressions by form and linker types

	no form	some form	maximal form
no linker			
linker			 **[that guy]**$_{\rightarrow}$

demonstrative description: [maximal form] and [linker]

null pronoun: [no form] and [no linker]

- Semantic theories: we often start with ⟦the⟧ (accidental; English-based)
- Typological picture tells us that maximal [form] and [linker] is the default

Classic account of *that*

Kaplan 1989 rigid, direct reference

- **direct reference**: returns an entity as output

  (1) I like [that kettle]$_{\rightarrow}$  returns 

- **rigid**: scopally inert; always picks out the referent in the speech context

  (2) (Pointing at ) If we switched the kettle and the cup,

  a. ...that thing would be a cup. false

  b. ...the thing I'd be pointing at would be a cup. true

A wide range of uses

Many uses of non-deictic demonstratives identified:

[Elbourne 2005; King 2001; Levinson 2004; Roberts 2002; Simonenko 2014; Wolter 2003, 2006, a.o.]

(3) I met a linguist. That linguist looked happy. [anaphoric]

(4) [THAT hero] [who KILLS the dragon] [will INHERIT the kingdom][explicit; Wolter 2003]

(5) Every university professor cherishes that first publication of theirs. [QI;King 2001]

...and others

Demonstratives as special definites

Often, demonstratives analyzed as marked definites:

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

non-default situation [Wolter 2006]

anti-uniqueness [Dayal and Jiang 2023]

proper restriction [Nowak 2019]

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anti-uniqueness [Dayal and Jiang 2023]
proper restriction [Nowak 2019]

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

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

- focus in the literature: what demonstratives can't do
- instead let's focus on what *definites* can't do
  composition with gesture

Demonstratives as modality linkers

Demonstratives are unique in allowing deixis and gesture to compose with the rest of the linguistic content

Demonstratives as modality linkers

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Gestures and speech work together to convey one thought

[Kendon 1980; McNeill 1992,a.o.]

[Q] In what ways are demonstratives unique?

Demonstratives allow noun-internal composition with gesture

- Demonstratives license at-issue, restrictive, and property-level meaning of pointing, namely that of a locational restriction
- evidence: co-speech pointing with and without demonstratives

👉 in speech without demonstratives

Role of demonstratives

- co-speech pointing observed to contribute weaker meaning contribution
  [Ebert 2017; Esipova 2018; Schlenker 2015, 2018; Tieu et al. 2017; Zlogar and Davidson 2018]
- Ebert et al. 2020: demonstratives bring gestures to at-issue
  - [the kettle]$_{\rightarrow}$ : identity with  presupposed
  - [that kettle]$_{\rightarrow}$ : identity with  asserted

👉 in speech without demonstratives

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stronger claim

Demonstratives not only change the level of meaning, but the *kind* of meaning that pointing contributes

- without demonstratives: proto-declarative [Bates 1976]
- with a demonstrative: noun-internal $< e, t >$ locational restriction

👉🏾 with a demonstrative: <e,t>

Pointing with demonstratives is an $< e, t >$ type predicate

1. No longer a proto-declarative; adds **noun-internal restriction** for reference

(7) a. [The ice machine] →  is broken. explanation

b. ?[That ice machine] →  is broken. ~~explanation~~

👉 with a demonstrative: <e,t>

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2. Makes deictic information **restrictive** [Ebert et al. 2020; Roberts 2002]

(8) 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.

Demonstratives

Demonstratives consist of form and linker

- suggested in many previous works:
  - 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

Implementation

- Demonstratives carry an additional restriction

  [King 2001, Wolter 2003, Elbourne 2005, Nowak 2019, a.o.]:

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

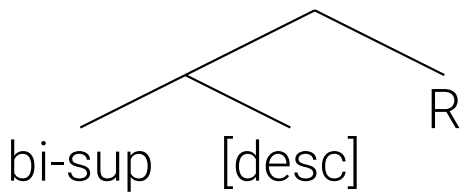
  (10) $[\![\text{that F}]\!] = \iota x.\ F(x) \wedge G(x)$

  - G is where the linker goes

Demonstratives as modality linkers

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

$\iota x.\ F(x) \wedge G(x)$ $\longrightarrow$

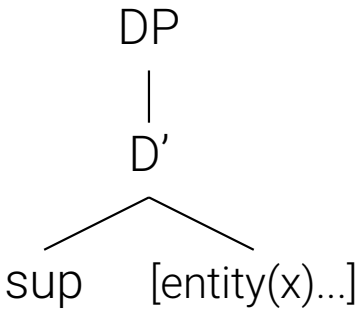


- Demonstratives across languages serve as this (unique) modality linker compose with a verbal argument and a gestural argument (γ)
- why demonstratives?
  - pointing precedes language [Bates 1976; Clark 1978; Diessel 2013; Tanz 1980, a.o.]
  - associated with demonstratives very early in acquisition

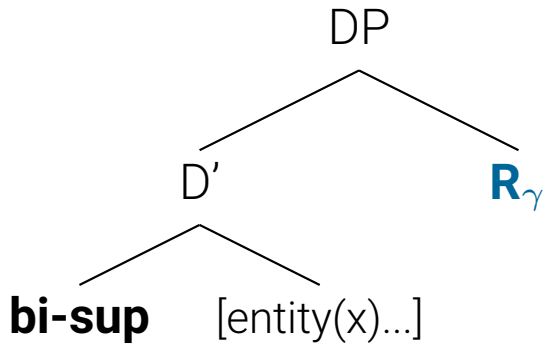
Implementation: Binary supremum operator

Demonstrative as a lexical linker

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



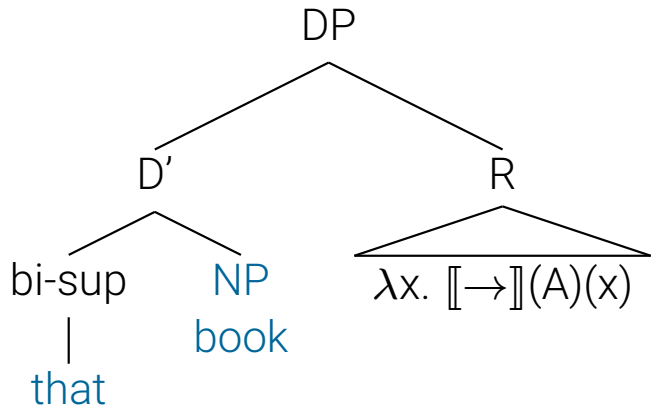
definite
'the maximal entity
that is [restriction]



demonstrative
'the maximal entity
that is [restriction]
and **also R_γ**

Deictic use

⟦that book$_{\rightarrow A}$⟧ =



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

- ⟦$\rightarrow_A$⟧ = λx. x is at A
  - ⟦→⟧ = λa. λx. x is at a

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

Accounting for deictic demonstratives

1. restrictive, noun-internal composition:

   (12) ?[That ice machine]$_{\rightarrow}$ is broken.

   the maximal entity that is an ice machine and is at the location of 

   (13) [That computer]$_{\rightarrow A}$ is new, but [that computer]$_{\rightarrow B}$ is old.

   the computer at A is new but the computer B is old

Accounting for deictic demonstratives

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   the computer at A is new but the computer B is old

2. rigid reference: location is fixed at speech context:

   (14) $[\![\rightarrow]\!] = \lambda a.\ \lambda x.\ x \text{ is at } a \text{ at } \underline{w_0}$

   (15) It is possible that if I meet a singer in Korea, I will talk to [that singer$_{\rightarrow A}$].

   a. $\exists w' \in W[R_{epi}(w)(w') \wedge talk_w([\text{bi-sup}(\lambda x.\text{singer}(x))(\lambda x.x \text{ is at } \boldsymbol{a} \text{ in } \boldsymbol{w_0})],sp)]$

Interim summary

	minimal form	more form	maximal form
unary	∅		
binary			**DEM$_{\rightarrow}$ NP**

⟦DEM⟧ as a modality linker

- it is a lexical operator that takes a gestural pointing and combines it with the rest of the NP semantics
  - implemented with Hidden Argument Theories
  - supplemented with UMH and focus on deixis

Accounts for:

1. unique interaction with pointing/gestures
2. ontogenetically primitive character of deixis

[linker] possibilities

Demonstratives across languages connect form and gesture

Demonstratives in many languages also appear without overt deixis

[Q] How do we identify the non-deictic uses?

- King 2001: deictic vs. non-deictic uses
- Fillmore 1971: gestural, symbolic, and anaphoric

(16) a. I want you to put it there.
b. (On the telephone) Is Johnny there?
c. I drove the car to the parking lot and left it there.

- Lakoff 1974: spatio-temporal deixis, discourse deixis, emotional deixis

[A] Derive them from deixis!

Deriving possible linkers from deixis

Consequence of the bi-sup + R_γ analysis

- constraints on R come from deixis

 can be replaced by...

- *Sol is playing guitar today.* clause
- *Sol* name, index
- *over there* PP

Deriving possible linkers from deixis

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 can be replaced by...

- *Sol is playing guitar today.* — clause
- *Sol* — name, index
- *over there* — PP

Linguistic linkers

1. relative clauses — *that hero who kills the dragon* [Wolter 2003]
2. preposition phrases — *that over there*
3. names (indices, possessives) — *Sol that person (Mandarin, Korean)*

Part 1: Summary

Demonstratives first

- we avoid undergeneration issues if we focus on what *the* can't do, not what *that* can't do

Role of demonstratives

- composition with depictive, deictic (non-descriptive) content
- extension to deixis-replacing material (PP, RC, names, indices)
    - diachronic change from demonstratives to (anaphoric) definites
      [Diessel 1999; Himmelmann 1996; Simonenko 2022, a.o.]

Demonstratives and kinds

Kind-denoting demonstratives

Demonstratives can take **particular-selecting** rigid, iconic information and incorporate it into **kind-denoting** descriptions.

(17) {That dolphin$_{\rightarrow}$ / Those dolphins$_{\rightarrow}$} will be extinct soon. [Zhang and Ahn 2026; SuB'25]

a. pointing to: 

b. referring to: `Southern Resident Orcas`

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Other examples [Krifka et al. 1995; Nunberg 1993; Umbach and Gust 2014, a.o.]

(18) Dieses Auto ist eine besondere Art von Limousine.
'This car is a special kind of limousine.' [Umbach and Gust 2014]

(19) That is a lion. [Krifka et al. 1995]

Kind-denoting demonstratives

Demonstratives can take **particular-selecting** rigid, iconic information and incorporate it into **kind-denoting** descriptions.

Demonstratives with iconic gestures:

(20) These lions$_{[\text{big head}]}$ will be extinct soon, not these lions$_{[\text{small head}]}$.

a. content: big head vs. small head
b. referring to: big-headed lion kinds vs. small-headed lion kinds

(21) These computers$_{[\text{big}]}$ evolved into these computers$_{[\text{flat}]}$.

a. content: big vs. flat shapes
b. referring to: big computer kinds and flat computer kinds

Kind denoting demonstratives

That demonstrative descriptions can be kind-denoting is not surprising:

- kinds are regarded as entities
- anything that can refer to an entity (names, definite descriptions, etc.) should be able to refer to kinds [Krifka et al. 1995]
- observed in many works [Krifka et al. 1995; Nunberg 1993; Umbach and Gust 2014, a.o.]

What is noteworthy: they go beyond simply referring to well-established kinds

- deictic information picks out an actual entity first *that dolphin*$_{\rightarrow}$ 
- iconic information composes with content of NP to form adhoc subkinds
  - these lions$_{[\text{big head}]}$ refer to lions with big heads

Kind readings

Kind-denoting demonstratives

Demonstratives with deixis in kind-denoting uses

(22)
a. That lion$_{\rightarrow}$ is extinct. — kind predicate
b. These cats$_{\rightarrow}$ have 2.3 offsprings. — average property
c. Those wolves$_{\rightarrow}$ get bigger as we travel north. — internal comparison

Demonstratives with depiction in kind-denoting uses

(23)
a. This lion$_{[\text{big-head}]}$ is extinct. — kind predicate
b. These computers$_{[\text{flat}]}$ weigh 1.3kg. — average property
c. These computers$_{[\text{flat}]}$ get lighter every year. — internal comparison

Diagnostics for kind reference

Diagnostics for kind reference

1 Compatibility with kind-level predicate *extinct*

demonstrative with deixis

(24) uo$_{\rightarrow}$ shizi iao juezhong lie.
that lion will extinct SFP
'Those lions are going to be extinct.' *Xi'anese*

(25) That lion$_{\rightarrow}$ will be extinct soon.

- target of pointing: a lion entity
- referent: a subkind of lion instantiated by target
- reading: taxonomic, specific

Diagnostics for kind reference

1 Compatibility with kind-level predicate *extinct*

demonstrative with depiction

(26) This lion$_{[\text{big head}]}$ will be extinct soon.

- referent: a subkind of lion characterized by having a big head
- reading: taxonomic, specific

Diagnostics for kind reference

2 Co-occurrence with kind-denoting nominals

Demonstrative with deixis

(27) uo$_{\rightarrow}$ che si zhong xin paoche.
that car be kind new sports car
'That car is a new kind of sports car.' *Xi'anese*

(28) Dieses Auto ist eine besondere Art von Limousine.
'This car is a special kind of limousine.' [Umbach and Gust 2014]

- target of pointing: a car entity
- referent: a subkind of car instantiated by target
- reading: taxonomic, specific

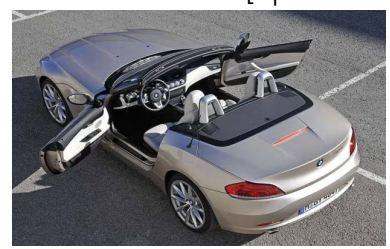
Diagnostics for kind reference

2 Co-occurrence with kind-denoting nominals

Demonstratives with depiction

(29) This car$_{[open\text{-}up]}$ is the new kind of sports car, not this car$_{[open\text{-}side]}$.





- referents: subkinds of cars characterized by [open-up] and [open-side]
- reading: taxonomic, specific

Diagnostics for kind reference

3 Obligatory narrow scope with an existential reading

(30) John fed rabbits for an hour. *adv* > ∃ [Dayal 2004 modified]

- narrow-scope reading due to Derived kind predication (DKP) [Chierchia 1998]

Diagnostics for kind reference

3 Obligatory narrow scope with an existential reading

(30) John fed rabbits for an hour. *adv* $>$ $\exists$ [Dayal 2004 modified]

- narrow-scope reading due to Derived kind predication (DKP) [Chierchia 1998]

[Seeing one Holland Lop and Cottontail Rabbit, the speaker points at the latter and says:]

(31) Mali fanfu-di wei uo$_{\rightarrow}$ tuzi.
Mary repeatedly feed that rabbit
'Mary repeatedly fed those$_{\rightarrow}$ rabbits.' *Xi'anese*

- target of pointing: a Cottontail Rabbit entity
- referent: instantiations of Cottontail Rabbit kind across different feeding events
- taxonomic, narrow-scope (DKP)

Properites of kind-denoting demonstratives

Properties

taxonomic and specific *That dolphin$_{\{\rightarrow,\ [big\text{-}head]\}}$ will be extinct soon*

- means one of the dolphin subkinds
- it is specifically referring to that subkind

demonstrative with deixis *That lion$_{\rightarrow}$ will be extinct soon*

- *not* pointing directly to a kind
  - kinds cannot be pointed to [Umbach and Gust 2014; cf. Carlson 1977]
- pointing to an object-level entity and referring to the subkind it instantiates

demonstrative with depiction *These lions$_{[big\ head]}$ will be extinct soon*

- syntactically complex: NP + gesture
- information of gesture characterizes the subkind

Question

Kind-referring expressions are generally assumed to be name-like

- Kinds are entities, and kind-referring expressions refer to those entities
- if syntactically complex, these are considered to be idiomatic (‘cannot be systematically derived from the meanings of their parts’ [Krifka et al. 1995:70])

Demonstratives allow composition: Deictic and depictive information combine with NP meaning compositionally

1. it refers to a subkind, characterized by/related to that information
2. the pointing and gesture contribute different meanings

Becoming kinds

Two strategies

Demonstratives with deixis

- a specific entity picked out
- it is then identified with the kind it is a member of

Demonstratives with depictions

- not pointing to a specific entity
- depiction contributes characterizing property
- the complex property turned into a kind

Demonstratives with deixis

Demonstratives with deixis

Properties

1. points to a particular entity
2. refers to the subkind

Ingredients

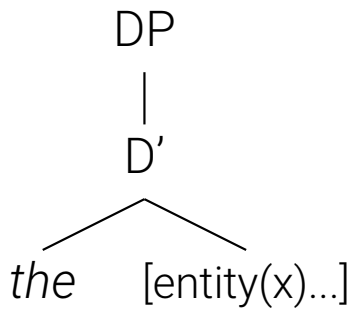
- Demonstrative as taking deixis into restriction of the ι operator [Ahn 2022]
- A way to identify that object with the subkind it is a member of
    - IS/ARE in Krifka et al. 1995

Demonstratives

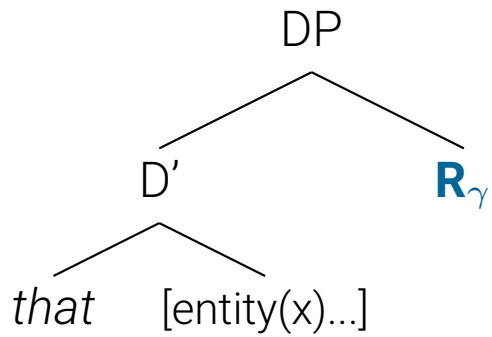
Adopting the analysis of demonstratives as a modality linker [Ahn 2022]

- takes two restrictions: one descriptive (*P*), one deictic/depictive (R_γ)

(32) $[\![\text{that}]\!] = \lambda P.\ \lambda R_\gamma.\ \iota x{:}P(y) \wedge R_\gamma(y)$



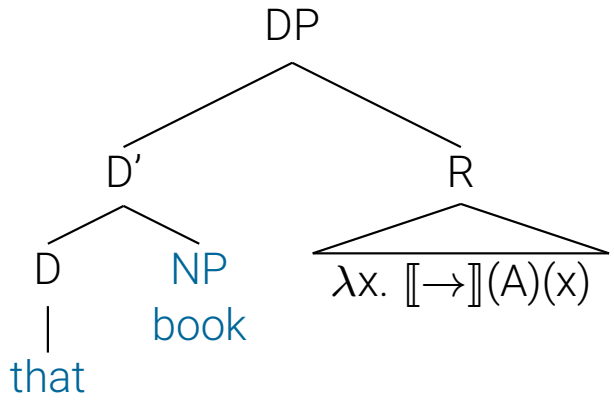
definite
'the maximal entity
that is [restriction]



demonstrative
'the maximal entity
that is [restriction]
and **also R_γ**

Deictic use

$[\![\text{that book}_{\rightarrow A}]\!]$ =



ιx. book(x) $\wedge$ $[\![\rightarrow]\!]$(A)(x)

- $[\![\rightarrow]\!]$(A)(x) = λx. at-A(x) (in w_0)

'the maximal entity *x* that is a book and is at A in the actual world'

- location is fixed in actual world
- rigid reference to the object being pointed to

IS/ARE

Krifka et al. 1995: kind is in some way identical to the object that belongs to it; a relation IS (plural ARE) used instead of identity

(33) $IS(x,y) \text{ }_{df} (x=y \vee R(x,y))$

- R(x,k): the object *x* belongs to the kind k
- 'x IS y as long as x is the same as y, or x belongs to the y kind'

(34) [Pointing to three actual lions in the zoo, the speaker says:]

a. This [a] is the lion [Leo leo]: IS(a, Leo leo).

b. It [Leo leo] lives in Africa: lives-in(Leo leo, Africa) [(134')]

We assume that IS is freely available to switch between reference to object and reference to the kind it belongs to

Demonstratives with deixis

Ingredients

- Demonstratives compose NP with deictic information (at A) and return the unique object located at A in w_0 [Ahn 2022]

  (35) $[\![\text{that dolphin}_{\rightarrow A}]\!] = \iota x.\text{dolphin}(x) \wedge \text{at-A}(x)$

- IS identifies that object to the kind it belongs to

  (36) $[\![\text{that dolphin}_{\rightarrow A}]\!] =$

  a. $\iota x.\text{dolphin}(x) \wedge \text{at-A}(x)$
  b. $\iota y.\text{IS}(\iota x.\text{dolphin}(x) \wedge \text{at-A}(x), y)$

(37) That dolphin$_{\rightarrow A}$ will be extinct soon.
extinct-soon($\iota y.\text{IS}(\iota x.\text{dolphin}(x) \wedge \text{at-A}(x), y)$)

a. pointing to: 
b. referring to: `Southern Resident Orcas`

Demonstratives with depiction

Demonstratives with depictions

Properties

1. do not point to a specific entity
2. depiction iconically represents the property that characterizes the subkind

- for depictions, the result of combining NOUN with DEPICTION must first become a kind as it is not referring to a specific entity
- no reference to a specific entity

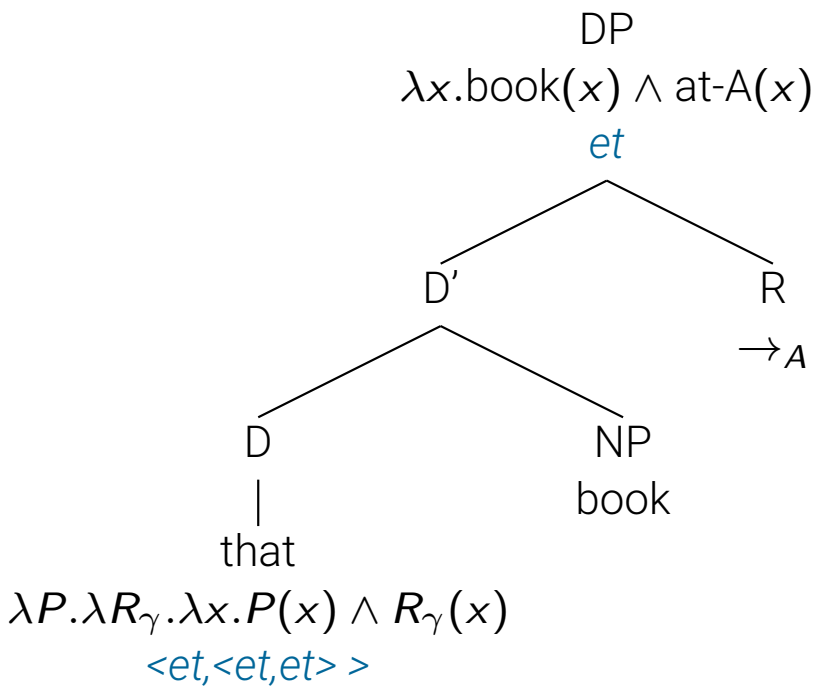
(38) These lions$_{[\text{big head}]}$ will be extinct soon
extinct-soon($\cap$[λx.lion(x)$\wedge$big-head(x)])

Role of demonstratives, revisited

A possible simplification:

- Instead of returning a unique entity, demonstrative simply adds the deictic/depictive information and returns a predicate
- Then, the predicate is subject to operators like ι, $\cap$
  - similar to Coppock and Beaver 2015's treatment of definites

$[\![\text{that book}_{\rightarrow A}]\!]$ =



Distinct from deferred reference

Deferred reference: no explicit relation but can be congruity [Nunberg 1993]

- (39) [Pointing to a baseball player]
  That's what we should play at recess. [(73)]

(40) [With every promotion, Phoebe gets a larger desk. The speaker points to the new desk and says:]
That used to be made of metal. [(53)]

However,

- these require ambiguity for demonstratives only
- IS/ARE allows uniform analysis across all noun types

(41) {That / The thing you saw in the zoo} is the lion.

Adhoc kinds

Distinction between deixis and depiction:

- deixis involves IS, which identifies the object to the kind it belongs to
- depiction takes the intersection of the noun and depiction to form a kind

Prediction:

- dem+deixis can only refer to well-established kinds
- dem+depiction can form adhoc kinds

→ Not verified yet, but similar observation in Umbach and Gust 2014

Deictic demonstratives refer to well-established kinds

Deictic demonstratives observed to be constrained to well-established kinds [Umbach and Gust 2014]

(42) [Pointing to a car on the street]
Dieses Auto will Anna haben. *token/type*
'Anna wants to have this car.' [(5)]

(43) [Pointing to a table in a bar]
Diesen Tisch will Anna haben. *token only*
'Anna wants to have this table.' [(6)]

Conclusion

Conclusion

1. Demonstratives' role

- incorporate deictic/depictive information to noun-internal meaning
- often returns a single entity, but can also be kind-referring
  → demonstratives return <e,t> predicates
- is not lexically associated with rigidity
  → rigidity as side-effect of 👉🏽

2. Role of deixis in reference

- restriction/information for resolving reference
  → sign language loci use [Ahn, Kocab, and Davidson 2026; Steinbach and Onea 2015]
- subject to pragmatic economy considerations
- providing source of rigidity, only in one particular use of it, to demonstratives

Tomorrow,

	no form	some form	maximal form
no linker			
linker			 **[that guy]**$_{\rightarrow}$

- filling in the ‘some form’ column: comparing ϕ with noun
- recasting ‘no linker’ vs. ‘linker’ as different kinds of argumentization

Thank you!



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