

# Some Apparently Unconnected Parameters in Demonstrative Reference

Peter Bosch & Carla Umbach  
Institute of Cognitive Science  
University of Osnabrück

Thanks to our collaborators from earlier stages of this research: Graham Katz, Phil Cummins, Boris Gutbrod, Kyoung-ho Park, Tom Rozario, and Yufan Zhao.

DGfS 2007, Siegen 28.02.2007

## German personal & demonstrative pronouns: Confusingly similar

*Gerade habe ich Peter getroffen. Er fragte nach Marion.*

PPro

*Gerade habe ich Peter getroffen. Der fragte nach Marion.*

DPro

[ *I just met Peter; He; he asked or Marion.* ]

Personal and demonstrative pronouns seem to function pretty much the same way. – Is there really a difference ?

## Initial observation: An ambiguity in English

Peter<sub>i</sub> wanted to play tennis with Paul<sub>k</sub>. But he<sub>{i,k}</sub> was sick.

*Peter wollte mit Paul Tennis spielen. Doch er war krank.*

PPro

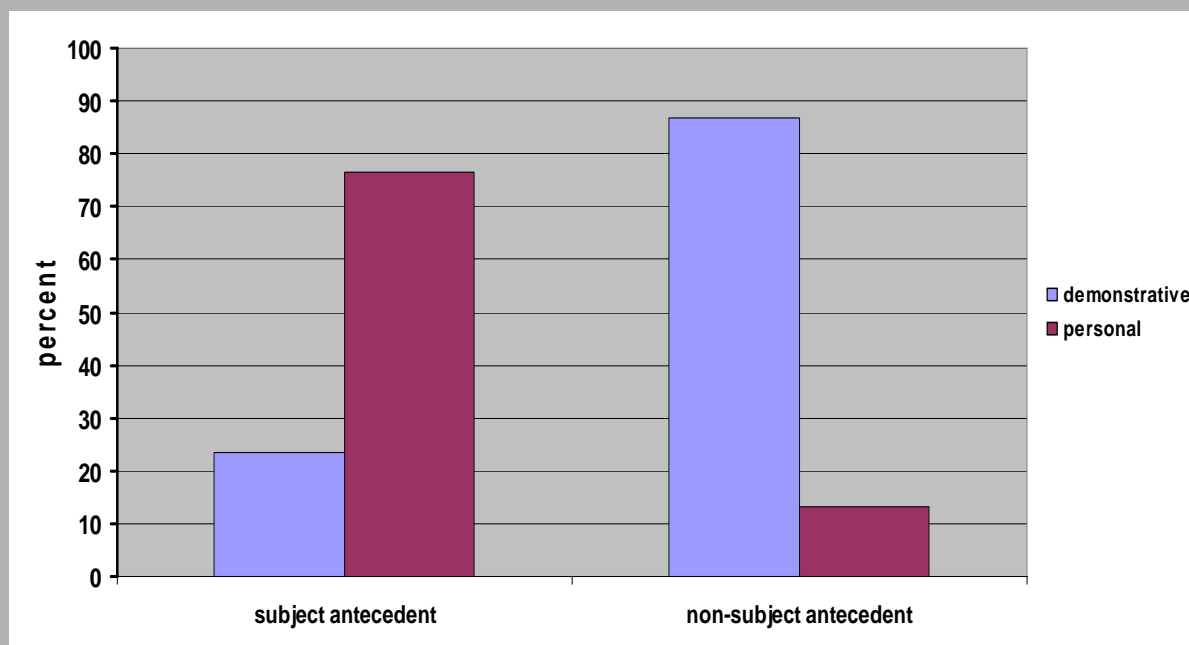
*Peter wollte mit Paul Tennis spielen. Doch der war krank.*

DPro

Clear intuitive judgement on preferred interpretation:

*er* refers to Peter and  
*der* refers to Paul

## Corpus Study: German Demonstrative vs. Personal Pronouns



*demonstratives* prefer non-subject antecedents

*personal pronouns* prefer subject antecedents

# Experimental study

## 1. How strong are the preferences when plausibility interferes?

method: reading time + completion task

materials:

1. *Der Chefarzt untersucht den Patienten. Der ist nämlich Herzspezialist.*  
[The head doctor is examining the patient. He<sub>DPro</sub> is a heart specialist.]

world knowledge prefers: **Der** => **Chefarzt** (subject bias of predicate)

pronoun type prefers: **Der** => **Patient** (non-subject bias of pronoun)

prediction:

(1) Conflict between preferences leads to longer reading time and more "errors" in completion tasks:

**der + subject bias > er + subject bias**

**er + non-subject bias > der + non-subject bias**

## Reading Time - Stimulus Materials

headline

**Im Krankenhaus** [In hospital]

introduction of two antecedents

(2) (i) **Der Chefarzt untersucht den Patienten.**  
[The head doctor is examining the patient.]

target sentence

(3) (a) **Er / Der ist nämlich Herzspezialist.** subject bias  
(He is a heart specialist.)

(b) **Er / Der muß sofort operiert werden.** object bias  
(He must be operated on immediately.)

(c) **Er / Der ist gerade erst gekommen.** unbiased  
(He has just arrived.)

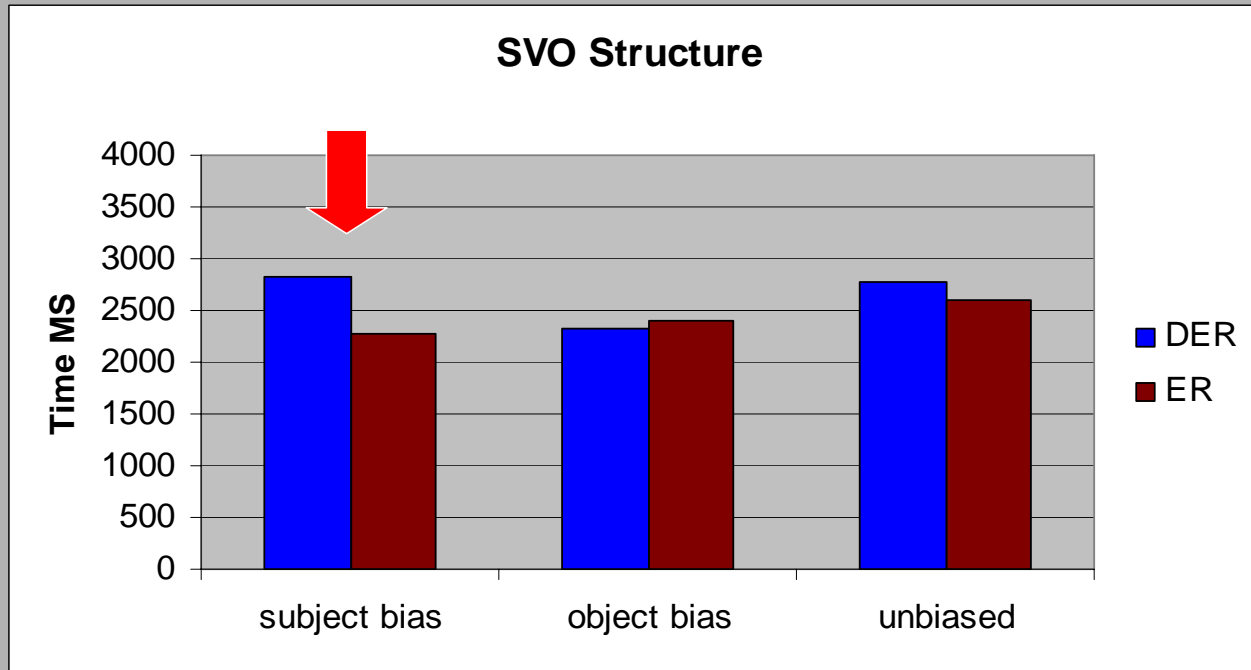
prediction:

Conflict between preferences leads to longer reading time

**der + subject bias > er + subject bias**

**er + non-subject bias > der + non-subject bias**

# Reading time - Results



→ significantly longer reading time for the use of *der* in a subject biased sentence

*Der* Chefarzt untersucht den Patienten.

Der ist nämlich Herzspezialist. > Er ist nämlich Herzspezialist

## Completion Task – Stimulus Materials

headline

Im Krankenhaus [In hospital]

introduction of two antecedents

(2) (i) **Der** Chefarzt untersucht den Patienten.

[The head doctor is examining the patient.]

target sentence

(3) (a) Er / Der ist nämlich Herzspezialist. subject bias

(He is a heart specialist.)

(b) Er / Der muß sofort operiert werden. object bias

(He must be operated on immediately.)

(c) Er / Der ist gerade erst gekommen. unbiased

(He has just arrived.)

(4) (a) **Der**     N     ist nämlich Herzspezialist.

(b) **Der**     N     muß sofort operiert werden.

(c) **Der**     N     ist gerade erst gekommen.

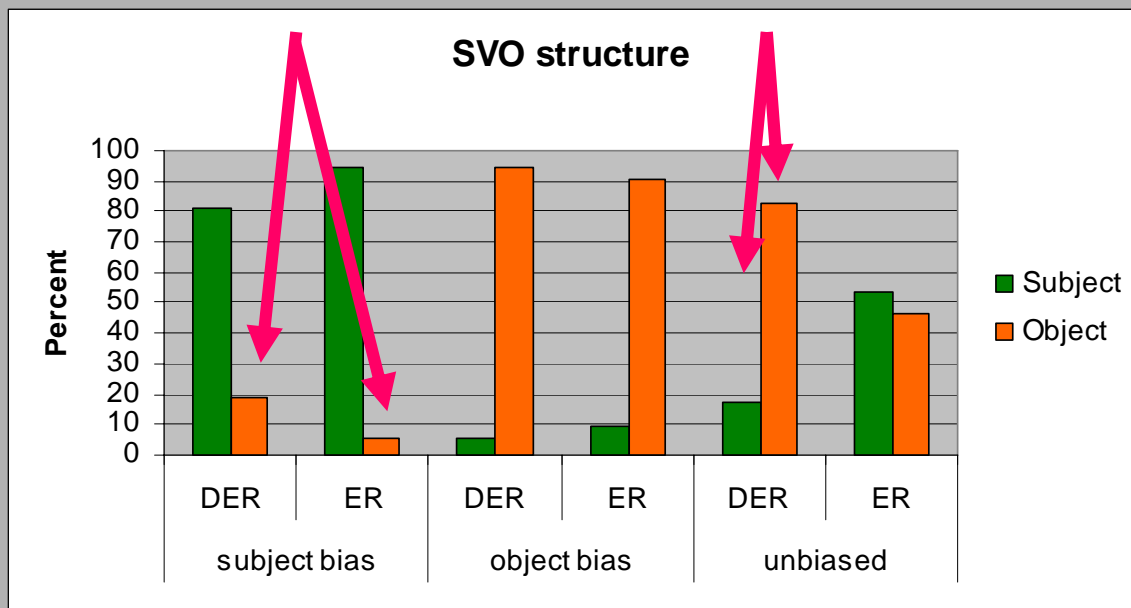
# Completion task

## Predictions:

*der* + subject-biased predicate leads to more “errors“ (i.e. violations of plausible interpretation) than *er* + subject-biased predicate

*er* + non-subject-biased predicate leads to more “errors“ than *der* + non-subject-biased predicate

## Completion task - Results



- ***der*+subject biased predicate:** more “errors“ than ***er*+subject biased predicate**  
Der Chefarzt untersucht den Patienten.  
Der ist nämlich Herzspezialist. Der Patient ist nämlich Herzspezialist.
- ***der*+unbiased predicate:** preference for the object  
Der Chefarzt untersucht den Patienten.  
Der ist gerade erst gekommen. Der Patient ist gerade erst gekommen.

# Experimental Study: Summary

## *Demonstrative pronouns prefer non-subject antecedents*

- reading time:  
*der* + subject bias > *er* + subject bias
- completion task:  
*der* + subject bias > *er* + subject bias  
*der* + unbiased: preference for the object

## So far: Nice Agreement

Something roughly similar has been suggested by Zifonun e.a. (1997), Abraham (2002), Winter (2003), for German

and by Comrie (1997), Kaiser & Trueswell (2004) for Dutch

But there are a number of differences in detail.

---

Let's start by looking at two questions:

1. Why have we been talking about *preference or tendency* ?
2. Is *grammatical role of antecedent* really the relevant parameter?

# "Preference" / "Tendency"

We talk in terms of tendencies or preferences when either

- o our subject matter is too complex to admit of discrete predictions (weather forecast or linguistics typology), or
- o there are parameters involved that admit of degrees

But is our business so complex? And are the parameters really a matter of degree? **Subject** and **Nominative** are not really degree business.

Or did we just get hold of the wrong parameters?

Perhaps **Subject**, and **Nominative** are really only loosely associated with the parameters that really matter?

## What are the relevant parameters?

All our talk has been about relations between pronouns and antecedents

but personal and demonstrative pronouns (at least in English, Dutch, or German) don't require antecedent expressions.

How do we capture antecedentless uses if we rely on properties of antecedent expressions (like case, or grammatical role)?

(watching someone trying to move a book case full of books):

*Wenn Du die Bücher nicht rausnimmst, kriegst Du {ihn/den} nie von der Stelle.*

If you won't take the books out, you'll never be able to move it {PPro/DPro}

# Pronouns and Antecedents

Relying on antecedents gets us into problems not only for pronoun uses in "spoken language" contexts or when the pronoun refers to the immediate perceptual environment.

We are also in trouble whenever the "antecedent" does not straightforwardly co-refer with the pronoun:

indefinite antecedents

*A woman came in. She said "Hallo".*

quantifying antecedents

*Only few students attended. They had better things to do.*

antecedentless reference

*They cut my telephone off this morning.*

"cumulative" reference

*Pete was late and so was Jane. They had missed the bus.  
Add three to two, and then multiply {it / that} by five.*

# Referent Parameters

Perhaps we had better consider parameters of denotations or referents than parameters of antecedent expressions.

**Demonstrative pronouns establish "less expected coreference"**  
Comrie (1997)

The grammatical means for making referents expectable or salient are different in different languages.

=> *There is a common parameter underlying the grammatical parameters, which is a parameter of referents, and hence can also account for antecedentless cases*

Let's consider some exceptions from our original subject hypothesis, and see if they can be captured by the expectancy hypothesis:

# Hard exceptions to the subject rule

DPro accepting subject antecedents (1c, 2c)  
and excluding non-subject antecedents (3c, 4c)

- (1c) *Woher ich das weiß? Peter<sub>i</sub> hat es mir gesagt. {Der<sub>i</sub>/ Er<sub>i</sub>} war gerade hier.* [How do I know? Peter<sub>i</sub> told me. He {DPro<sub>i</sub>/PPro<sub>i</sub>} has just been here.]
- (2c) *Woher Maria<sub>k</sub> das weiß? Peter<sub>i</sub> hat es ihr<sub>k</sub> gesagt. {Der<sub>i</sub>/ Er<sub>i</sub>} war gerade hier.* [How does Maria<sub>k</sub> know? Peter<sub>i</sub> told her<sub>k</sub>. He {DPro<sub>i</sub>/PPro<sub>i</sub>} has just been here.]
- (3c) *Woher Karl<sub>i</sub> das weiß? Peter<sub>k</sub> hat es ihm<sub>i</sub> gesagt. {Der<sub>k</sub>/ Er<sub>i,k</sub>} war gerade hier.* [How does Karl<sub>i</sub> know? Peter<sub>k</sub> told him<sub>i</sub>. He {DPro<sub>k</sub>/PPro<sub>i,k</sub>} has just been here.]
- (4c) *Woher Maria<sub>i</sub> das weiß? Peter<sub>k</sub> hat es ihr<sub>i</sub> gesagt. {?Die<sub>i</sub>/ Sie<sub>i</sub>} war gerade hier.* [How does Maria<sub>i</sub> know? Peter<sub>k</sub> told her<sub>i</sub>. She {DPro<sub>i</sub>/PPro<sub>i</sub>} has just been here.]

## Discussion of the Exceptions

- (A) PPro, despite a certain preference for subject antecedents, are not fussy about non-subject antecedents, even in competition situations.
- (B) DPro, although they generally reject subject antecedents, may also accept subject antecedents (1c, 2c) at least in non-competition situations;  
in (3c) even with a strong preference and excluding the non-subject antecedent,  
and in (4c) the DPro rejects the subject antecedent, although there is no alternative.

**Grammatical role of antecedent may be a fair corpus generalization, but is definitely not the relevant parameter.**

# But what is the relevant parameter?

DPro accepting subject antecedents (1c, 2c)  
and excluding non-subject antecedents (3c, 4c)

(1c) *Woher ich das weiß? Peter<sub>i</sub> hat es mir gesagt. {Der<sub>i</sub> / Er<sub>i</sub>} war gerade hier.* [How do I know? Peter<sub>i</sub> told me. He {DPro<sub>i</sub>/PPro<sub>i</sub>} has just been here.]

(2c) *Woher Maria<sub>k</sub> das weiß? Peter<sub>i</sub> hat es ihr<sub>k</sub> gesagt. {Der<sub>i</sub> / Er<sub>i</sub>} war gerade hier.* [How does Maria<sub>k</sub> know? Peter<sub>i</sub> told her<sub>k</sub>. He {DPro<sub>i</sub>/PPro<sub>i</sub>} has just been here.]

(3c) *Woher Karl<sub>i</sub> das weiß? Peter<sub>k</sub> hat es ihm<sub>i</sub> gesagt. {Der<sub>k</sub> / Er<sub>i,k</sub>} war gerade hier.* [How does Karl<sub>i</sub> know? Peter<sub>k</sub> told him<sub>i</sub>. He {DPro<sub>k</sub>/PPro<sub>i,k</sub>} has just been here.]

(4c) *Woher Maria<sub>i</sub> das weiß? Peter<sub>k</sub> hat es ihr<sub>i</sub> gesagt. {?Die<sub>i</sub> / Sie<sub>i</sub>} war gerade hier.* [How does Maria<sub>i</sub> know? Peter<sub>k</sub> told her<sub>i</sub>. She {DPro<sub>i</sub> / PPro<sub>i</sub>} has just been here.]

**DPro avoid referents that have been discourse topics.**

## DPro avoid discourse topics

- If this generalization is correct, it follows that the earlier generalization in terms of subjects had to be roughly correct: Subjects typically refer to discourse topics.
- It also follows that pointing uses to discourse-new referents (not previously mentioned, no antecedent expressions) should be acceptable.
- Complex referents (Brown-Schmidt et al. 2005), composed of parts that may have been topics of the discourse, are also discourse-new and not themselves discourse topics, hence good referents for DPro.

# The evidence

We repeatedly talked of "preferences" and "tendencies", thus allowing for "exceptions". – It's time to stop hedging.

Topic and focus are categories of **information structure**; information structure is a **discourse property** that is not always directly reflected in the syntax and semantics of sentences.

To provide relevant evidence for our claim we must consider cases where the mapping of information structure to the primary data is unambiguous and where intuitive judgements do not allow for both PPro and DPro.

## The evidence (2)

(4c) *Woher Maria<sub>i</sub> das weiß? Peter hat es ihr<sub>i</sub> gesagt. {#Die<sub>i</sub> / Sie<sub>i</sub>} war gerade hier. [How does Maria<sub>i</sub> know? Peter told her<sub>i</sub>. She {DPro<sub>i</sub> / PPro<sub>j</sub>} has just been here.]*

(4d) *Woher Maria<sub>i</sub> das weiß? Sie<sub>i</sub> hat es von Susanne<sub>k</sub> gehört. {#Die<sub>i</sub> / Die<sub>k</sub> / Sie<sub>i</sub>} war gerade hier. [How does Maria<sub>i</sub> know? She<sub>i</sub> heard it from Susanne<sub>k</sub>. She {#DPro<sub>j</sub> / DPro<sub>k</sub> / PPro<sub>j</sub>} has just been here.]*

Maria is a clear case of a discourse **topic**:

Repeated previous reference, last reference by an unstressed anaphoric PPro

=> **Inaccessible to DPro.**

# The evidence (3)

- (5a) *Gestern habe ich Karl<sub>k</sub> getroffen. Er<sub>k</sub> arbeitet jetzt bei einem Herrn Paul<sub>i</sub>. {Der<sub>i</sub> / #Er<sub>i</sub> / Er<sub>k</sub>} arbeitet mehr als alle anderen. [Yesterday I met Karl<sub>k</sub>. He<sub>k</sub> works for a certain Herr Paul<sub>i</sub> now. He {DPro<sub>i</sub> / #PPro<sub>i</sub> / PPro<sub>k</sub>} works more than anybody else.]*
- (5b) *Gestern habe ich Karl<sub>k</sub> getroffen. Er<sub>k</sub> arbeitet jetzt bei einem Herrn Paul<sub>i</sub>. Aber {der<sub>i</sub> / #er<sub>i</sub>} mag ihn<sub>k</sub> nicht. [Yesterday I met Karl<sub>k</sub>. He<sub>k</sub> works for a certain Herr Paul<sub>i</sub> now. But he {DPro<sub>i</sub> / #PPro<sub>i</sub>} doesn't like him<sub>k</sub>.]*
- (5c) *Gestern habe ich Karl<sub>k</sub> getroffen. Er<sub>k</sub> arbeitet jetzt bei einem Herrn Paul<sub>i</sub>. Aber {den<sub>k</sub> / #ihn<sub>i</sub>} mag er<sub>k</sub> nicht. [Yesterday I met Karl<sub>k</sub>. He<sub>k</sub> works for a certain Herr Paul<sub>i</sub> now. But him {DPro<sub>i</sub> / #PPro<sub>i</sub>} he<sub>k</sub> doesn't like.]*

Herr Paul is a clear case of a **focus**:

Introduced by an indefinite NP in a focus position

=> **Inaccessible to PPro.**

# Counter evidence\*

- (6a) *Gestern habe ich Karl<sub>k</sub> getroffen. Er<sub>k</sub> arbeitet jetzt bei IBM. Den<sub>k</sub> sollten wir mal einladen. [Yesterday I met Karl<sub>k</sub>. He<sub>k</sub> works for IBM now. We should invite him (DPro<sub>k</sub>) some time.]*

Karl is a clear case of a discourse **topic**: Repeated previous reference, last reference by an unstressed anaphoric PPro.

**But still accessible to DPro !**

---

\* This example is due to Hans-Martin Gärtner.

# Counter evidence ?

(6a) Gestern habe ich Karl<sub>k</sub> getroffen. Er<sub>k</sub> arbeitet jetzt bei IBM.  
Den<sub>k</sub> sollten wir mal einladen.

But why are the following continuations not acceptable:

(6b) ...#Dem<sub>k</sub> hat man die Wohnung gekündigt. [He's (DPro<sub>k</sub>) been given notice to leave his flat.]

(6c) ...#Der<sub>k</sub> hatte letzte Woche einen Autounfall. [He (DPro<sub>k</sub>) had a car accident last week.]

and why is (6a) so much improved by the continuations

(6a')... Dem<sub>k</sub> hätte ich das wirklich nicht gewünscht.

(6a'')...Den<sub>k</sub> sollten wir auch mal einladen.

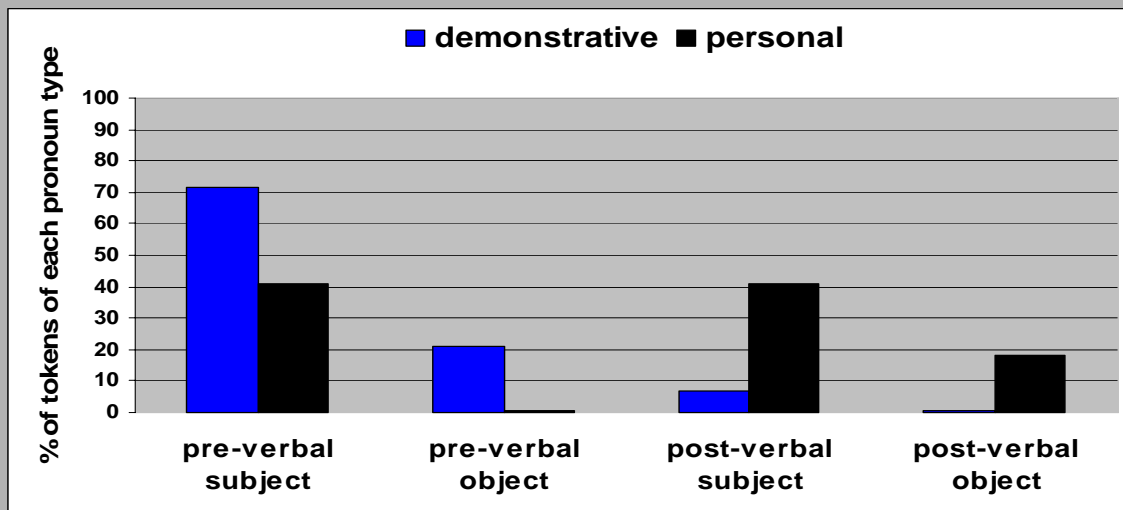
Apparently the acceptability of the DPro in this position is influenced by *properties of the predication* that is attached to it. - How could that be ?

# Counter evidence ?

The acceptability of Gärtner's example can be also be improved by making the DPro unambiguously focal (apply focal stress and insert "auch"):

(6a) Gestern habe ich Karl<sub>k</sub> getroffen. Er<sub>k</sub> arbeitet jetzt bei IBM.  
Auch DEN<sub>k</sub> sollten wir mal einladen.

Quantitative corpus data about the distribution of DPro occurrences point the same direction: *DPro occur most frequently in focus positions*



# The amended hypothesis

A DPro requires a focal referent,  
unless the DPro itself is in focus position.

This hypothesis makes sense if we understand DPro as *pointing devices* with two closely related functions:

- a. Discourse deixis, referring to the object that is being pointed at: the denotation of the preceding focus referent.

Here DPro are regular pronouns, on a par with anaphoric personal pronouns that refer to the denotation of the preceding topic. This is the grammaticalized function.

- b. True Pointing, here DPro must be in a focus position; the DPro predicates of its argument (the VP denotation) that it applies to that referent there. The VP in this use must be interpretable as topical.  
- This is probably the primeval function of DPro.

A DPro requires a focal referent,  
unless the DPro itself is in focus position.

The amended hypothesis explains the apparent counter example and the difference between acceptability of the continuations:

(6a) *Gestern habe ich Karl<sub>k</sub> getroffen. Er<sub>k</sub> arbeitet jetzt bei IBM.*

**topical VPs**

(6a') ... *Dem<sub>k</sub> hätte ich das wirklich nicht gewünscht.* [I would have wished better for him (DPro<sub>k</sub>)]

(6a'') ... *Den<sub>k</sub> sollten wir auch mal einladen.* [We should invite him (DPro<sub>k</sub>) too some time]

**discourse-new, focal VPs**

(6b) ...*#Dem<sub>k</sub> hat man die Wohnung gekündigt.* [He's (DPro<sub>k</sub>) been given notice to leave his flat.]

(6c) ...*#Der<sub>k</sub> hatte letzte Woche einen Autounfall.* [He (DPro<sub>k</sub>) had a car accident last week.]

## A DPro requires a focal referent, unless the DPro itself is in focus position.

The two functions of DPro are related by type shifting: Discourse Deixis, like Discourse Anaphora, is referential, and True Pointing is predicative.

(a) *Gerade habe ich Peter getroffen. Der fragte nach Marion.*  
[ I just met Peter. He asked for Marion.]

$[[\lambda x.\text{fragte\_nach\_Marion}(x)]] ([[der_i]]]$

(b) *Gerade habe ich Peter getroffen. DER fragte nach Marion.*  
[ I just met Peter. It was him who asked for Marion.]

$[[\lambda P.\text{der}(P)]] ([[ \lambda x.\text{fragte\_nach\_Marion}(x) ]])]$

(a) requires an established referent for the DPro

(b) requires that the property be topical, or can at least be accommodated

## A DPro requires a focal referent, unless the DPro itself is in focus position.

(a) *Gerade habe ich Peter getroffen. Der fragte nach Marion.*  
[ I just met Peter. He asked for Marion.]

(b) *Gerade habe ich Peter getroffen. DER fragte nach Marion.*  
[ I just met Peter. It was him who asked for Marion.]

(c) *Gerade habe ich Peter getroffen. Er fragte nach Marion.*  
[ I just met Peter. He asked for Marion.]

Difference etween (a) and (b)?

None (and our hypothesis doesn't predict one) - as long as the referent is in focus and also the pronoun).

Differences appear once either condition does not hold.

Difference etween (a) and (c)?

None as long as the referent is in focus and there is no competing topic referent.

Thank you!