# Revisiting Pronominal Typology

Pritty Patel-Grosz, Patrick G. Grosz


Linguistic Inquiry, Volume 48, Number 2, Spring 2017, pp. 259-297 (Article)

Published by The MIT Press

# Revisiting Pronominal Typology

*Pritty Patel-Grosz*
*Patrick G. Grosz*

The overarching goal of this article is to shed new light on the debate over whether pronouns (*she*/*he*/*it*) generally have the syntax and semantics of definite descriptions (*the woman*/*the man*/*the thing*) or that of individual variables. As a case study, we investigate the differences between personal pronouns and demonstrative pronouns in German. We argue that the two types of pronouns have the same core makeup (both contain a null NP and a definite determiner), but demonstrative pronouns have additional functional structure that personal pronouns lack. This analysis is shown to derive both their commonalities and their differences, and it derives the distribution of demonstrative vs. personal pronouns by means of structural economy constraints.

*Keywords:* personal pronouns, demonstrative pronouns, German, syntax-semantics interface, gender mismatch, economy constraints

## 1 Background: The Current Debate

Traditionally, pronouns are taken to be the prime instantiation of individual-denoting variables in natural language (see Heim and Kratzer 1998, Büring 2011 for textbook overviews). For instance, the standard *pronouns-as-individual-variables* analysis of *she* in (1) would assume a logical form (LF) along the lines of (2a–b), where the pronoun carries an individual index that represents a discourse referent in the contextually given assignment function *g*. In recent years, the question of whether 3rd person pronouns (*she*) and nonpronominal DPs (*the woman*) have identical syntactic structures and semantic interpretation has taken on new importance. A view

We would like to thank Adam Albright, Luis Alonso-Ovalle, Katrin Axel-Tober, Mark Baltin, Sigrid Beck, Daniel Büring, Gennaro Chierchia, Jeroen van Craenenbroeck, Ev Fedorenko, Kai von Fintel, Danny Fox, Ted Gibson, Martin Hackl, Irene Heim, Sabine Iatridou, Florian Jaeger, Gerhard Jäger, Kyle Johnson, Dalina Kallulli, Tom Leu, Alec Marantz, Paula Menéndez Benito, David Pesetsky, Steve Piantadosi, Masha Polinsky, Maribel Romero, Uli Sauerland, Philippe Schlenker, Florian Schwarz, Anna Szabolcsi, Igor Yanovich, Sarah Zobel, two anonymous *Linguistic Inquiry* reviewers, and the audiences at SNEWS 2009, Sinn und Bedeutung 14, AMLaP 2013, NELS 45, KogWis 2014, the workshop The World of Reflexives (Utrecht, September 2011), the Göttingen Indefinites Workshop (Göttingen, November 2011), the workshop Pronouns in Embedded Contexts at the Syntax-Semantics Interface (Tübingen, November 2014), as well as audiences at Brown University, the University of Cologne, CUNY, the University of Groningen, Leipzig University, MIT, the University of Potsdam, the University of Tübingen, and the University of Vienna.

The research in this article was partially supported by research assistants in the projects of Patrick Grosz: the experimental studies (in section 3.2) were carried out with the help of research assistants Iuliia Ichin-Norbu, Rebecca Kreß, Elisa Nani, Michaela Neichel, and Anna Prysłopska; the corpus studies (in sections 3.1 and 5.3) were carried out with the help of research assistants Jana Grob, Matthias Holweger, and Kirsten Reißing.

This research was partially funded by Patrick Grosz's grant 32-01/12 from the Daimler and Benz Foundation and grant 09021401 from the University of Tübingen. Pritty Patel-Grosz was funded by the Collaborative Research Center SFB 833 (projects B2 and C4) of the German Science Foundation (DFG) at the University of Tübingen.

Linguistic Inquiry, Volume 48, Number 2, Spring 2017
259–297

doi: 10.1162/ling_a_00243

that treats both types of expressions alike was originally proposed by Postal (1966) and has received a new implementation in works by Elbourne (2005, 2013) and Sauerland (2007), among others. For a simple referential pronoun like *she* in (1), the *pronouns-as-definite-descriptions* analysis yields the LF in (3a); such analyses generally assume that the meaning of determiners is relativized to a restrictor situation, which we write as a subscripted $\sigma n$, following the convention in Büring 2004. Nouns are treated as properties of type $\langle e,\langle s,t\rangle\rangle$, as given in (3b–c), based on Büring 2004:40 and Elbourne 2013:193; see Elbourne 2005:chap. 6 and references therein for the treatment of proper names in (3c). The idea is that (2b) and (3d) end up picking out the same individual in a sentence like (1), but do so in different ways.

(1) **Mary** went to a festival yesterday. **She** danced.

(2) a. Pronouns-as-individual-variables LF of *she danced*: **she$_7$** danced
b. $[\![\text{she}_7]\!]^g = g(7)$
where *g* is a contextual assignment that includes *[7 → Mary]*

(3) a. Pronouns-as-definite-descriptions LF of *she danced*: [**the$_{\sigma 3}$ Mary**] danced
b. $[\![\text{woman}]\!]^g = \lambda x . \lambda s . x \text{ is a woman in } s$
c. $[\![\text{Mary}]\!]^g = \lambda x . \lambda s . x \text{ is called Mary in } s$
d. $[\![\text{the}_{\sigma 3} \text{ Mary}]\!]^g = \iota x [x \text{ is called Mary in } g(\sigma_3)]$

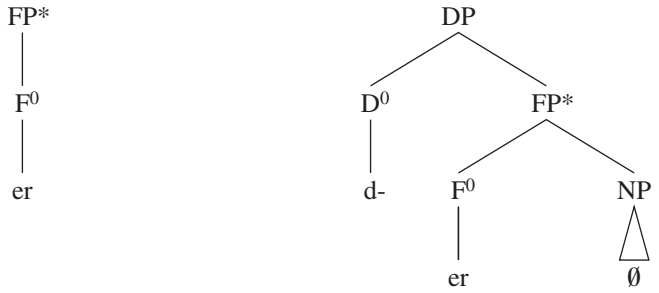
To shed new light on the question of whether (2b) or (3d) is the more adequate analysis, we revisit the difference between personal pronouns (henceforth, PERs) and demonstrative pronouns (henceforth, DEMs),[1] illustrated for German in (4) (see Wiltschko 1998, Bosch, Rozario, and Zhao 2003, Bosch and Umbach 2007). In (4), both *er* 'he' and *der* 'he, that one' can refer back to the discourse referent associated with Maria's neighbor, and no semantic difference between the two pronouns is apparent. While we use German as our object language for most of this article, parallel distinctions arise in many languages: for instance, Portuguese contrasts *ela* (PER) with *esta* (DEM), French contrasts *elle* (PER) with *celle-ci* (DEM), and Hebrew contrasts *hi* (PER) with *ha-hi* (DEM).

(4) Maria hat einen netten Nachbarn. {**Er** / **Der**} gießt im Sommer ihre Blumen.
Maria has a nice neighbor he$_{PER}$ he$_{DEM}$ waters in summer her flowers
'Maria has a nice neighbor. **He** (= her neighbor) waters her flowers in the summer.'

The relevance of the PER vs. DEM distinction immediately becomes apparent if we look at the different analyses proposed for the syntax of these pronouns, which are schematically illustrated in (6); here, *FP** stands for one or more functional projections in the extended functional projection of the noun phrase. (5a–b) and (6a) represent the analysis of Wiltschko (1998), who argues that only DEMs contain a null NP and a DP shell, while PERs simply spell out a functional projection (an AgrP/ΦP in Wiltschko's analysis).

[1] It is far from clear that there is anything truly ''demonstrative'' about so-called demonstrative pronouns in German, which is why we will use the label DEM instead (and the label PER for the so-called personal pronouns).

(5) a. *Personal pronoun (PER)* b. *Demonstrative pronoun (DEM)*




The syntactic analysis in (6a)/(5) contrasts with the analysis in (6b), which assumes that both DEMs and PERs contain a null NP, while only DEMs contain a DP shell; such a view is hinted at by Déchaine and Wiltschko (2002:412n5, 438), though this is not the main focus of their article. Finally, one may maintain a strongly uniform view, as in (6c), where PERs and DEMs do not differ at all; while authors may not explicitly argue for such a view, it appears to be implicit in work by Elbourne (2005, 2013), Sauerland (2007), and Hinterwimmer (2015), who pursue structural identity of DEMs, PERs, and nonpronominal DPs.

| (6) | a. *Nonuniform I* | b. *Nonuniform II* | c. *Uniform* |
|---|---|---|---|
| DEM: | $[_{DP}$ D $[_{FP*}$ F $[_{NP}$ N]]] | $[_{DP}$ D $[_{FP*}$ F $[_{NP}$ N]]] | $[_{DP}$ D $[_{FP*}$ F $[_{NP}$ N]]] |
| PER: | $[_{FP*}$ F] | $[_{FP*}$ F $[_{NP}$ N]] | $[_{DP}$ D $[_{FP*}$ F $[_{NP}$ N]]] |

Our goal is to tease apart which type of analysis ((6a), (6b), or (6c)) is most adequate to explain the difference between PERs and DEMs. The choice of analysis has clear semantic implications. From a perspective like (6a), DEMs are treated as definite descriptions, while PERs are analogized to individual variables. By contrast, (6b–c) entail that both DEMs and PERs are treated as something akin to a definite description, since they contain a null NP.

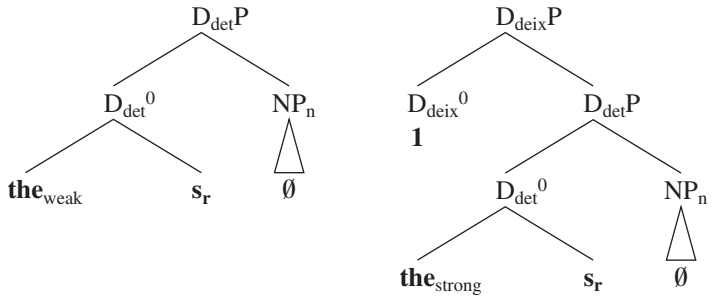
## 2 Our Proposal in a Nutshell

In brief, we argue for a variant of (6b), as illustrated in (7). Our analysis combines a split-DP syntax (Ihsane and Puskás 2001, Laenzlinger 2005) with the semantics of Schwarz (2009). Specifically, we argue that all pronouns contain a null NP and a functional head with the semantics of the definite determiner (here symbolized as $D_{det}$); demonstrative pronouns project an additional $D_{deix}$ head that dominates an individual index (here: *1*); that is, the contrast between PERs and DEMs mirrors Schwarz's (2009) distinction between weak and strong articles.[2] A personal pronoun, (7a), contains a weak determiner, which picks out a unique individual $x$ in the restrictor situation $s_r$ that has the NP property $NP_n$, as given in (8a). By contrast, a demonstrative pronoun, (7b), contains a strong determiner, which requires an additional (index) argument that picks out an

[2] Our proposal is foreshadowed by a note in Schwarz's (2009:291) open questions section, where he speculates that the DEM vs. PER distinction may involve strong vs. weak determiners, as we argue.

individual discourse referent, as given in (8b). For now, we remain agnostic as to whether the NP property $NP_n$ is encoded by a structurally represented noun or contextually retrieved via the assignment function $g$. We come back to this issue later. Section 3 motivates the internal uniformity of pronouns; section 4 lays out the details of the semantics and motivates a DP-shell analysis.

(7) a. *Personal pronoun / PER (**er**)* b. *Demonstrative pronoun / DEM (**der**)*




(8) a. $[\![\text{PER}]\!]^g = [\![(7a)]\!]^g = \iota x[[\![\mathbf{NP_n}]\!]^g(x)(s_r)]$
b. $[\![\text{DEM}]\!]^g = [\![(7b)]\!]^g = \iota x[[\![\mathbf{NP_n}]\!]^g(x)(s_r) \;\&\; x = g(1)]$
where $s_r$ abbreviates $g(s_r)$, and $[\![\boldsymbol{NP_n}]\!]^g$ represents the denotation of the null NP

What is central to our analysis is that it predicts that pronouns are subject to structural economy constraints in the pragmatics; that is, (7a) should be more economical than (7b). In section 5, we implement this in terms of a generalized DP minimization principle (Chomsky 1981:65, Cardinaletti and Starke 1999:198, Schlenker 2005:391) and present different effects that are most adequately analyzed as reflections of structural economy.[3]

## 3 Motivating [±NP] Uniformity

Our core empirical claim in this section is that PERs and DEMs are internally alike; that is, they do not systematically differ in that PERs always lack a null NP whereas DEMs always contain a

[3] At this point, one might wonder whether (and how) our analysis carries over to truly demonstrative elements. In German, *der* as an article is often assumed to be ambiguous between a regular definite determiner *der* 'the' and a demonstrative determiner *der* 'that' (Heim 1991, Leu 2008:17, Schwarz 2009:34). Leu (2008:17) argues that intonation disambiguates, and thus (i) contains the definite determiner, whereas (ii) contains a demonstrative determiner.

(i) der TISCH
the table
'the table'

(ii) DER Tisch
that table
'the table'

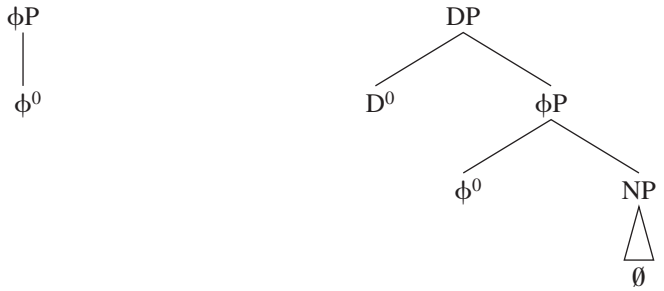
Parallel contrasts can be found with DEMs, as in (iii) vs. (iv); that is, we could conjecture that *der* is a true demonstrative in (iv), but not in (iii).

(iii) Der hat das geMACHT.
DEM has this done
'He did this.'

(iv) DER hat das gemacht.
DEM has this done
'It was HE / THAT ONE who did this.'

null NP (as proposed by Wiltschko (1998)). Wiltschko (1998) posits the distinction in (9) (see also Patel-Grosz and Grosz 2010).

(9) a. *Personal pronoun / PER* b. *Demonstrative pronoun / DEM*




Wiltschko provides an empirical argument based on a difference that she reports in (10c) vs. (10d). She argues that a DEM must match an antecedent's grammatical gender, as in (10c), which is attributed to DP-internal concord with the elided NP *Mädchen* 'girl'. As shown in (10b), such DP-internal concord does not allow for gender mismatch. By contrast, PERs exhibit gender mismatch, as shown in (10d), which Wiltschko attributes to the fact that they lack an NP (and thus DP-internal concord). Crucially, the judgment in (10c) is controversial, which is why we put the asterisk in angle brackets.

(10) a. **Ein** **Mädchen** kam zur Tür herein.
a.NEUT girl(NEUT) came to.the door in
b. {**Das** **Mädchen** / ***Die** **Mädchen**} war schön.
the.NEUT girl(NEUT) the.FEM girl(NEUT) was beautiful
c. {**Das** / ⟨*⟩**Die**} war schön.
DEM.NEUT DEM.FEM was beautiful
d. {**Es** / **Sie**} war schön.
PER.NEUT PER.FEM was beautiful
'**A girl** came through the door. {**The girl** / **She**} was beautiful.'
(Wiltschko 1998:163–164; her judgments)

In what follows, we first present corpus data that falsify the empirical claim in (10). We then discuss experimental data, which further corroborate the view that the difference between PERs and DEMs is not correlated with a [±NP] difference.

---

We will remain agnostic on this issue, as it is secondary under our view whether demonstrative pronouns contain the strong definite article or an actual demonstrative. Ihsane and Puskás (2001:47) argue (on the basis of the proposal in Bernstein 1997) that true demonstratives are base-generated below $D_{det}^0$ and may undergo head movement into $D_{det}^0$ (and then further up into $D_{deix}^0$); alternatively, the entire DemP may undergo phrasal movement to Spec,$D_{deix}^0$. The first of these two options is illustrated in (v) for French *ce bâtiment* 'this building'.

(v) $[_{\text{D-deixP}}$ ce$_i$ $[_{\text{D-detP}}$ $t_i$ $[_{\text{FP}}$ $[_{\text{DemP}}$ $t_i]$ $[_{\text{F'}}$ $F^0$ bâtiment]]]]
(adapted from Ihsane and Puskás 2001:47, using our labels)

*3.1 Corpus Data Favoring a Uniform Approach to Pronouns*

We collected data from two large corpora, the DeReKo (IDS Mannheim), using the COSMAS II web application, and the DeWaC corpus (Baroni et al. 2009), using the CQP web application of the Humboldt University of Berlin. A qualitative analysis of the data clearly challenges the core intuition in (10c): we found that gender-mismatched demonstrative pronouns occur, and the corpus examples are judged acceptable by native speakers. First, we collected more than 30 examples of a demonstrative pronoun *die* 'she' in the front field of a juxtaposed verb-second clause. Representative examples are given in (11)–(13), which are from newspapers representing three different German varieties. (The finite verb is italicized in the clauses that contain the DEMs.)

(11) Ich kann mich an **ein Mädchen** erinnern, **die** *traute* sich nicht mal die
I can self to a girl.NEUT remember DEM.FEM dared self not even the
Stiegen hinauf.
stairs up
'I remember **a girl**, **she** didn't even dare to walk up the stairs.'
(DeReKo: *Niederösterr. Nachrichten*, July 2013 [Austria])

(12) Meine zwei besten Pferde werden zum Beispiel von **einem kleinen Mädchen**
my two best horses are for example by a little girl.NEUT
geritten. **Die** *macht* das toll.
ridden DEM.FEM makes that great
'For example, my two best horses are ridden by **a little girl**. **She** does a great job.'
(DeReKo: *Braunschweiger Zeitung*, March 2007 [Germany])

(13) Wir hatten in der Sek **ein Mädchen**, **die** *war* fast so etwas wie die
we had in the sec a girl.NEUT DEM.FEM was almost so something like the
Klassenmutter.
class.mother
'We had **a girl** in secondary school, **she** was like a class mother.'
(DeReKo: *Zürcher Tagesanzeiger*, January 1996 [Switzerland])

Examples with gender-mismatched *die* in a noninitial position are rarer, but attested, as given in (14).

(14) [Er] hat zwei Stunden mit **einem Mädchen** gespielt, bevor **die** mir dann
he has two hours with a girl.NEUT played before DEM.FEM me then
gesagt hat, daß ihre kleine Schwester gerade Windpocken gehabt hat . . .
said has that her little sister just chickenpox had has
'[At a playground,] he [= the speaker's son at age 1.5] once played with **a girl** for two hours, before **she** told me that her little sister had just had chickenpox . . .'
(DeWaC 3: position 264224157)

Strikingly, even more examples ($n > 190$) involve gender-mismatched relative pronouns; this observation is important since relative pronouns are generally analyzed uniformly with demonstrative pronouns (e.g., Wiltschko 1998, Trutkowski and Weiß 2016); a representative example is given in (15). Overall, the relative clause examples seem to involve specific indefinites and

appositive relatives (see De Vries 2012), as witnessed by the possibility of paraphrasing (15) as in (16) without a noticeable change in meaning.

(15) Dann habe ich **ein Mädchen** kennengelernt, **die** mich zu einem Grillabend
then have I a girl.NEUT met REL.FEM me to a barbecue
in den Stadtpark *einlud*.
into the city.park invited
'Then I met **a girl who** invited me to a barbecue in the city park.'
(DeReKo: *Hamburger Morgenpost*, July 2011)

(16) Dann habe ich **ein Mädchen** kennengelernt, und **die** *lud* mich zu einem
then have I a girl.NEUT met and DEM.FEM invited me to a
Grillabend in den Stadtpark *ein*.
barbecue into the city.park V.PRT
'Then I met **a girl** and **she** invited me to a barbecue in the city park.'

We conclude that the corpus data falsify the empirical claim in (10c) and thus undermine the empirical basis for positing a [+NP] vs. [−NP] distinction among DEMs and PERs, respectively. Specifically, the corpus data show that gender mismatches are equally possible with both types of pronouns. This is compatible both with a uniform [+NP] approach and with a uniform [−NP] approach. In section 3.3, we discuss uniform [+NP] approaches in more detail, considering how to account for gender mismatch if, say, the NP must be structurally represented. For now, the main conclusion is that a [+NP] vs. [−NP] distinction between pronominal paradigms is unmotivated.[4]

[4] Before we conclude this section, two methodological remarks are in order.

First, we are using the corpus data to make a qualitative claim that gender-mismatched demonstrative pronouns (and relative pronouns) are possible. While *die* appears to be less frequent than *das* in the relevant contexts, a quantitative/statistical comparison of relative frequencies (e.g., comparing the ratio of *das*/*die* with the ratio of *es*/*sie*) is not insightful at this point since many factors are at play that can be assumed to distort the numbers, including politeness considerations (which may favor *sie* 'she' over all competing forms), the general markedness of DEMs that we argue for (which requires suitable licensing conditions to be present), and the potential ambiguity of *das*/*die* (as discussed in footnote 3).

Second, there is evidence from newspapers and journals that strongly indicates that gender-mismatched demonstrative and relative pronouns are tolerated by native speakers, as they are reprinted in spite of copyediting. We have found two particularly relevant instances of gender-mismatched relative pronouns. Example (i) from the DeReKo is a quote from an interview, which was reprinted identically in three daily newspapers (*Mannheimer Morgen*, *Nürnberger Nachrichten*, and *Die Presse*) in July 2013.

(i) Es gab schon **ein Mädchen**, **die** eine Kampagne für ihren Hund gestartet hat.
it gave already a girl.NEUT REL.FEM a campaign for her dog started has
'There has already been **a girl who** started a campaign for her dog.'

Similarly, the DeReKo corpus contains two variants of a newspaper article, where (iii) is presumably a revised version of (ii). As indicated, the author/editor did not correct the gender mismatch on the relative pronoun (but did correct, for instance, *ein* 'a' → *ihr* 'her').

(ii) . . . als er **einem jungen Mädchen** begegnete, **die** ein Baby in einem Tuch trug.
when he a young girl.NEUT met REL.FEM a baby in a cloth carried
'[. . . an experience in Rwanda,] where he met **a young girl who** carried a baby in a cloth.'
(DeReKo: *Rhein-Zeitung*, 14 January 2006)

(iii) Dort sei er **einem jungen Mädchen** begegnet, **die** ihr Baby in einem Tuch trug.
there be he a young girl.NEUT met REL.FEM her baby in a cloth carried
'[. . . an experience in Rwanda:] There, he met **a young girl who** carried her baby in a cloth.'
(DeReKo: *Rhein-Zeitung*, 14 January 2006)

Before we move on to experimental data, it is worth noting that other types of feature mismatch pattern alike. For instance, the neuter singular noun *Ehepaar* 'married couple' can combine with a plural relative pronoun *die* 'who', as shown in (17).

(17) a. Afternoon tea mit **einem alten englischen Ehepaar**, **die** sich
afternoon tea with an older English married.couple.NEUT.SG who.PL self
die Reise zum 50. Hochzeitstag gegönnt *haben*.
the journey for.the 50th anniversary allowed have
'Afternoon tea with **an older English married couple who** treated themselves to the journey for their 50th anniversary.'
(DeWaC 3: position 227235504)

b. Ich kenne hier **ein türkisches Ehepaar**, **die** beide in
I know here a Turkish married.couple.NEUT.SG who.PL both in
Deutschland studiert *haben*.
Germany studied have
'I know **a Turkish married couple** here, **who** both studied in Germany.'
(DeWaC 6: position 165246523)

### *3.2 Experimental Data Favoring a Uniform Approach to Pronouns*

In this section, we discuss experimental data that yield additional support for a uniform approach over a nonuniform approach. We carried out an experiment with the aim of testing the predictions of a uniform vs. nonuniform view on whether pronouns contain a structurally represented null NP. To do so, we focused on the observation that pronouns exhibit a preference for an explicit NP antecedent, which must not be part of another word (Postal 1969; see Grosz et al. 2015 for discussion). Specifically, we were interested in cases where the intended antecedent is part of an N + N compound, as in (18). As shown in (18a) vs. (18b–c), this *Overt NP Constraint* has been argued to be a variable constraint.

(18) a. ?(*)Every [$_N$ **donkey**-owner] beats **it**.
(Heim 1982:80)

b. Every [$_N$ **Academy Award** winner] treasures **it** for the rest of his life.
(Ward 1997:203)

c. Every [$_N$ **Siberian husky** owner] needs to give **it** lots of exercise.
(Jacobson 2001:48)

However, in a language that differentiates between different types of pronouns, we may expect the type of pronoun (DEM vs. PER) to interact with the Overt NP Constraint. If DEMs are [+NP] and PERs [−NP], the prediction is that the former are structurally resolved (mirroring the licensing of, say, VP-deletion) and the latter pragmatically, in the spirit of Hankamer and Sag's (1976) and Sag and Hankamer's (1984) *surface anaphora* vs. *deep anaphora*. This would predict that the Overt NP Constraint should be stronger in the structurally resolved DEMs than in the pragmatically resolved PERs. By contrast, if such a distinction is missing, we expect the two types of pronouns to exhibit parallel effects of the Overt NP Constraint.

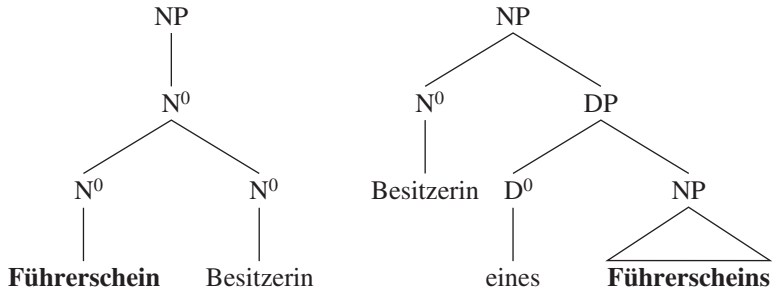
A sample item is given schematically in (19). We crossed two factors, *overtness* and *pronoun type*. The values for *pronoun type* were ''personal'' (*ihn* 'him') and ''demonstrative'' (*den* 'him').

For *overtness*, the ''nonovert'' condition contained the intended antecedent as part of an N+*owner* compound (here, *Führerscheinbesitzerin* 'driver's license owner'), whereas the ''overt'' condition contained the intended antecedent as a separate NP (here, *Führerscheins* 'driver's license' in *Besitzerin eines Führerscheins* 'owner of a driver's license').

(19) Wenn eine Studentin {**Führerschein**besitzerin / Besitzerin eines **Führerscheins**} ist,
if a student driver's.license.owner owner of.a driver's.license is
dann trägt sie {**ihn / den**} meist im Geldbeutel mit sich.
then carries she PER DEM mostly in.the wallet with self
'If a student is {a **driver's license** owner / an owner of a **driver's license**}, then she usually carries {**it / DEM**} around in her wallet.'

The structural difference between the nonovert condition and the overt condition is sketched in (20a) (see Olsen 1986) vs. (20b), respectively. In the spirit of the Overt NP Constraint, *Führerschein* 'driver's license' should be a suitable antecedent for a subsequent pronoun in (20b), but not in (20a), where it is part of another word.

(20) a. *Nonovert condition* b. *Overt condition*




The predictions can be stated as follows: A uniform [±NP] analysis predicts a main effect of overtness (= Overt NP Constraint) and a main effect of pronoun (since DEMs are generally more marked, as discussed in Bosch, Rozario, and Zhao 2003; see section 5), but no interaction. By contrast, a nonuniform analysis predicts a statistical interaction of pronoun and overtness, to reflect the [+NP] vs. [−NP] difference: the effect of overtness should be stronger with demonstrative pronouns than with personal pronouns.[5]

Our experiment contained 32 items in four conditions, plus 72 fillers, in a Latin square design, distributed over four pseudorandomized lists; participants rated sentences for naturalness, using a 7-point Likert scale. Thirty-two native speakers of German participated in the study, on-

[5] An anonymous reviewer points out that this experimental design is based on the assumption that NP-deletion in languages such as German (and English) cannot be licensed by an antecedent that is embedded in a compound. We take this to be a reasonable assumption, since it is commonly assumed that XP-deletion requires a suitable (phrasal) XP antecedent (see Lobeck 1995, Elbourne 2005). Since the parts of an N + N compound do not generally have phrasal (or even N′) status (see (20a)), we expect that they do not constitute suitable antecedents for NP-deletion. A skeptical reader may wish to compare examples such as (i) and (ii) (modeled after similar examples in Elbourne 2005), whose acceptability clearly differs.

(i) Mary is the owner of a **bulldog**.
And Jane's [$_{NP}$ Ø] is chained up in the kennel over there.

(ii) ?*Mary is a **bulldog** owner.
And Jane's [$_{NP}$ Ø] is chained up in the kennel over there.

site in a computer lab at the University of Tübingen; the study was programmed using OnExp version 1.3.

We analyzed our results with the statistical language R (R Core Development Team 2008). A linear mixed-effects regression yields a main effect of overtness ($t = 3.3, p < .01$) and a main effect of pronoun type ($t = 2.7, p < .01$), but no statistical interaction. The results are summarized in figure 1.[6] The experimental findings support a uniform analysis over a nonuniform analysis, thus providing further support to the view that PERs and DEMs do not differ along [±NP] lines.

### *3.3 Support for a Uniform [+NP] View*

Given the discussion in sections 3.1 and 3.2, we conclude that one of the following views must be correct: (a) PERs and DEMs always contain a null NP; (b) PERs and DEMs always lack a null

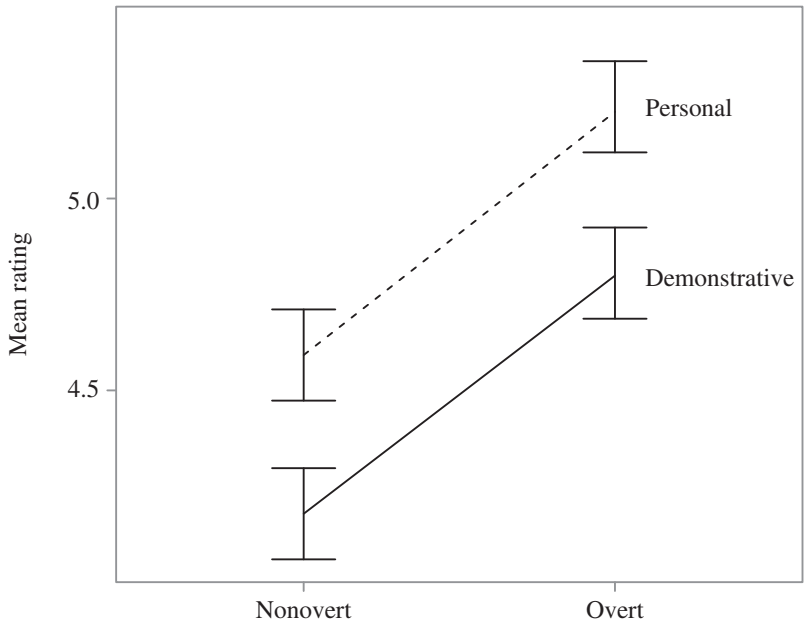



**Figure 1**
Mean ratings by condition

---

Similar examples are difficult to construct for VP-deletion, since V + N compounds are unproductive in present-day English (Liberman and Sproat 1992:145–146), but see (iii) vs. (iv) for a comparable contrast (though, of course, *dance hall* may be more strongly lexicalized than *bulldog owner*).

(iii) In the town, there was a nice place to **dance**, so we did [$_{VP}$ Ø].

(iv) ?*In the town, there was a nice **dance** hall, so we did [$_{VP}$ Ø].

[6] An anonymous reviewer raises the question of how to interpret the main effect of overtness; specifically, the reviewer wonders whether this may indicate that both PERs and DEMs contain an anaphoric index (rather than, as we argue, only DEMs), and that no suitable discourse referent is introduced for that index in our nonovert conditions. This hypothesis is falsified in section 4, particularly in the discussion of (34)–(38).

NP; or (c) PERs and DEMs can each sometimes contain a null NP and sometimes lack a null NP. Our core proposal thus amounts to the insight that PERs and DEMs cannot systematically differ along the [+NP] vs. [−NP] divide (i.e., it cannot be the case that DEMs systematically contain a null NP, whereas PERs systematically lack a null NP); nevertheless, we now present preliminary evidence for the view that PERs and DEMs always contain a null NP, which we assume for the purposes of this article.

The core argument concerning the question of whether all pronouns are [−NP] or [+NP] stems from Elbourne (2005, 2013) and Sauerland (2007), in whose view all pronouns are definite descriptions, which contain at least a null NP and a definite determiner.[7] Sauerland's (2007:205) argument in favor of [+NP] uniformity is the following: in sentences like (21a–c), where the pronoun has an inanimate antecedent, the grammatical gender feature of the pronoun (e.g., masculine if the antecedent is 'spoon') is uninterpreted, which raises the question of how it arises.

(21) a. Tim hat **einen** **Löffel** gestohlen. **Er** war aus Gold.
Tim has a.MASC spoon(MASC) stolen *pro*.MASC was of gold
b. Tim hat **eine** **Gabel** gestohlen. **Sie** war aus Gold.
Tim has a.FEM fork(FEM) stolen *pro*.FEM was of gold
c. Tim hat **ein** **Messer** gestohlen. **Es** war aus Gold.
Tim has a.NEUT knife(NEUT) stolen *pro*.NEUT was of gold
'Tim stole **a spoon / fork / knife**. **It** was made of gold.'
(Sauerland 2007:205)

Sauerland argues that if we assume that all pronouns contain an NP, grammatical ϕ-features on pronouns simply reflect concord between a determiner and a null NP.

(22) Tim hat [DP **einen** [NP **Löffel**]] gestohlen. [DP **Er** [NP ~~Löffel~~]] war aus Gold.
Tim has a.**MASC** spoon(**MASC**) stolen it.**MASC** spoon(**MASC**) was of gold

Elbourne (2013:201) provides parallel examples from French (which he attributes to Tasmowski-De Ryck and Verluyten 1982:328), as quoted in (23) and (24).

(23) (Jean is trying to stuff a large table [*la table*, feminine] into the trunk of his car. Marie says:)
Tu n' arriveras jamais à {**la** / ***le**} faire entrer dans la voiture.
you not arrive.FUT.2SG never to it.FEM it.MASC make enter into the car
'You'll never manage to get **it** into the car.'

(24) (Same scenario, but with a desk [*le bureau*, masculine]:)
Tu n' arriveras jamais à {***la** / **le**} faire entrer dans la voiture.
you not arrive.FUT.2SG never to it.FEM it.MASC make enter into the car
'You'll never manage to get **it** into the car.'

[7] While the view of pronouns as definite descriptions has predominated in the literature on so-called donkey pronouns (e.g., Parsons 1978, Cooper 1979, Heim 1990), see Elbourne 2013:194–201 for an analysis of bound pronouns and deictic referential pronouns as definite descriptions.

Notably, the French pronouns *la* 'she' and *le* 'he' are generally analyzed as clitics (e.g., Cardinaletti and Starke 1999), and the same observation carries over to clitic pronouns in Bavarian, as shown in (25). The pattern in (25) indicates that clitic personal pronouns contain a null NP, responsible for their ϕ-features, just like full personal pronouns (*pace* Déchaine and Wiltschko (2002:439), who speculate that clitic pronouns may be ϕ heads that do not select a null NP).

(25) a. Da Tim hât **an** **Leffl** gstuin. Und i hâb'**m** gfundn.
the Tim has a.MASC spoon(MASC) stolen and I have=*pro*.MASC found
b. Da Tim hât **a** **Gâbl** gstuin. Und i hâb'**s** gfundn.
the Tim has a.FEM fork(FEM) stolen and I have=*pro*.FEM found
c. Da Tim hât **a** **Messa** gstuin. Und i hâb'**s** gfundn.
the Tim has a.NEUT knife(NEUT) stolen and I have=*pro*.NEUT found
'Tim stole **a spoon / fork / knife**. And I found **it**.'

Before concluding this section, we should revisit one point. We have shown that a wide array of pronouns (clitic personal pronouns, nonclitic personal pronouns, and demonstrative pronouns) exhibit matching in grammatical gender with their antecedent; at the same time, the same types of pronouns exhibit gender mismatch with nouns like *Mädchen* 'girl'.[8] This situation is summarized in (26).

(26) Ich kenne **ein Mädchen**. **Sie** / **Es** / **Die** / **Das**
I know a girl.NEUT.SG PER.FEM.SG PER.NEUT.SG DEM.FEM.SG DEM.NEUT.SG
lebt nebenan.
lives next.door
'I know **a girl**. **She** lives next door.'

Naturally, if we accept the argumentation from (21)–(25), we encounter somewhat of a conundrum here. On the one hand, the grammatical gender features on the pronoun (neuter singular on *es* 'it' and *das* 'it') indicate that there must be a structurally represented null NP, as in (22). On the other hand, we need a means to account for gender-mismatched pronouns (feminine singular on *sie* 'she' and *die* 'she'), which does not follow from DP-internal concord with an elided *Mädchen* (see (10b)).

There are two possible solutions to this puzzle. The first is to assume that pronouns may contain a structurally represented null NP, accounting for grammatical gender matching, but they can also lack such an NP, accounting for matching in natural gender, that is, gender mismatch (this may involve presuppositional gender features; see Cooper 1979). The second is to maintain that pronouns always contain a structurally represented null NP, but there is a limited set of dummy null NPs, which have grammatical gender marking that corresponds to the natural gender

[8] A Bavarian example with neuter singular *Madl* 'girl' and a gender-mismatched pronoun is given in (i). We can only show this for the full personal pronoun, as the neuter singular clitic and the feminine singular clitic are identical, as shown in (25b–c).

(i) Da Tim hât ma **a Madl** foagstöht. I hâb mit **ia** gredt.
the Tim has to.me a girl.NEUT.SG introduced I have with her.FEM.SG spoken
'Tim introduced **a girl** to me. I spoke to **her**.'

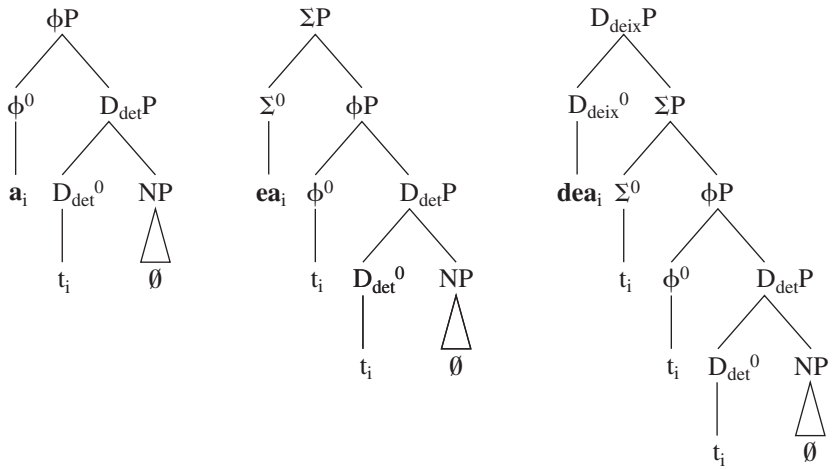
of possible referents. For *Mädchen* 'girl', the gender-mismatched pronoun would then contain the structural null NP in (27).

(27) $[\![[_{NP}\ \emptyset_{FEM}]]\!] = \lambda x\ .\ \lambda s\ .$ x is one or more females in s
(based on Kratzer 2009:221)

To conclude section 3, we have argued that PERs and DEMs at least sometimes contain a structurally represented null NP (accounting for grammatical gender marking on pronouns). We have also argued that the view that they always contain such a null NP is at least conceivable, though strong evidence for this view is lacking.

One may, at this point, wonder how we account for the difference between clitic personal pronouns and nonclitic personal pronouns in the system outlined above. While this will be secondary to our discussion, we can assume that the grammatical, purely formal ϕ-features that we discussed are encoded in a functional head that is present in all overt pronouns (but plausibly absent in null pronouns). What clitic pronouns may lack is another purely formal projection that encodes the prosodic information that would allow them to be prosodic words in their own right; for this, we can adopt the ΣP of Cardinaletti and Starke (1999) (see also Wiltschko 1998 for discussion). For concreteness' sake, we include a full illustration of the three Bavarian versions of the 3rd person masculine singular pronoun (*a*/*ea*/*dea* 'he') in (28). We mark a head movement chain that connects the different functional heads in the spirit of Laenzlinger 2005:665–666, but nothing hinges on such movement; alternatively, the different heads may well be spelled out in situ (possibly in a decompositional manner as depicted in Wiltschko 1998). Note that, in order to simplify, we assume that the ϕP and the ΣP in (28) are purely formal (encoding grammatical features) and thus semantically vacuous. Semantically interpreted ϕPs would have to be located above the $D_{deix}P$ in the case of demonstrative pronouns, assuming that such ϕPs denote partial identity functions on individuals (i.e., functions of type ⟨e,e⟩).[9]

(28) a. *Clitic pronoun* b. *Personal pronoun* c. *Demonstrative pronoun*




[9] Since we assume (for present purposes) that ϕP and ΣP are semantically vacuous, (28a) and (28b) both have the LF/interpretation in (7a)/(8a), whereas (28c) has the LF/interpretation in (7b)/(8b).

Having thus outlined the basic model, we proceed to discuss the semantics of pronouns, which motivates the two distinct D positions $D_{det}$ and $D_{deix}$.

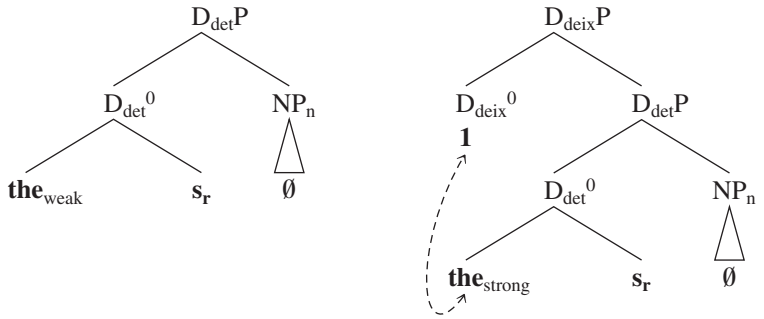
## 4 Motivating DP Shells in Pronouns

So far, we have argued that personal and demonstrative pronouns contain a null NP of type ⟨e,t⟩, or rather ⟨e,st⟩, as illustrated in (29).

(29) $[\![[_{NP}\ \text{Mädchen}]]\!] = \lambda x\ .\ \lambda s\ .\ x \text{ is a girl in } s$

Since both types of pronouns denote individuals, the most plausible assumption is that both contain a definite determiner, which we locate in a lower D head, $D_{det}$ in (30a–b). In the spirit of Schwarz 2009, we assume that $D_{det}$ can be weak, (31a), or strong, (31b).

(30) a. *Personal pronoun / PER (**er**)* b. *Demonstrative pronoun / DEM (**der**)*




(31) a. $[\![\text{the}_{weak}]\!]^g = \lambda s_r\ .\ \lambda P_{\langle e,st\rangle} : \exists!x[P(x)(s_r)]\ .\ \iota x[P(x)(s_r)]$

b. $[\![\text{the}_{strong}]\!]^g = \lambda s_r\ .\ \lambda P_{\langle e,st\rangle}\ .\ \lambda y : \exists!x[P(x)(s_r)\ \&\ x = y]\ .\ \iota x[P(x)(s_r)\ \&\ x = y]$
(Schwarz 2009:148, 260, 299, stylistically adapted)

For any null NP ($NP_n$) and resource situation $s_r$, (30) and (31) will yield the pronominal meanings in (32a–b). In words, both PERs and DEMs pick out a unique individual $x$ that has the NP property in the resource situation $s_r$.[10] In addition, DEMs contain an anaphoric index (see Schwarz 2009: 258 for the strong article), which imposes identity of the pronoun's referent with a salient discourse referent. For concreteness' sake, we assume that this index is hosted in a higher $D_{deix}$ position, in line with the split-DP syntax of Ihsane and Puskás (2001) and Laenzlinger (2005). However, our core proposal only requires the presence of an anaphoric index to correlate with additional structure; that is, nothing hinges specifically on the choice of treating this as a projecting $D_{deix}$ head, and the index may alternatively be located in a specifier of $D_{det}P$.[11]

[10] For a discussion of resource situations, see Schwarz 2009:95.

[11] Ihsane and Puskás (2001:40) assume that the lower D head (our $D_{det}$) is responsible for ''select[ing] one object in the class of possible objects'' (≈ uniqueness), whereas the higher D head (our $D_{deix}$) ''relates [the DP] to pre-established elements in the discourse'' (≈ anaphoricity). Conceptually, the connection between a split-DP syntax and a Schwarz-style semantics is thus evident.

(32) a. $[\![\text{PER}]\!]^g = [\![(30a)]\!]^g = \iota x[[\![\mathbf{NP_n}]\!]^g(x)(s_r)]$
b. $[\![\text{DEM}]\!]^g = [\![(30b)]\!]^g = \iota x[[\![\mathbf{NP_n}]\!]^g(x)(s_r) \,\&\, x = g(1)]$
where $s_r$ abbreviates $g(s_r)$, and $[\![\boldsymbol{NP_n}]\!]^g$ represents the denotation of the null NP

The idea that an anaphoric index is inserted if and only if $D_{det}$ contains a strong determiner follows in the semantics, since a type mismatch would occur otherwise. In (30a), the denotation of the $D_{det}P$ is of type *e*; that is, it cannot trivially combine with another element of type *e* (such as an anaphoric index). By contrast, in (30b), the denotation of the $D_{det}P$ is of type ⟨e,e⟩ owing to the additional argument position of the strong article, meaning that it requires an additional argument (provided in the $D_{deix}$ head in (30b)).

We now discuss empirical arguments for the distinction in (32). First, it can be shown that DEMs are unacceptable in contexts parallel to the ones that disallow strong determiners. Schwarz (2009) observes that strong determiners (which are detected by their inability to contract with prepositions) are infelicitous in nonanaphoric cases like (33). Here, the existence of a unique mayor is presupposed, but he has not been mentioned in the preceding discourse; that is, no salient discourse referent has been introduced, as (32b) would require.

(33) Der Empfang wurde {**vom** / **#von dem**} Bürgermeister eröffnet.
the reception was by=the$_w$ by the$_s$ mayor opened
'The reception was opened by the mayor.'
(Schwarz 2009:40, stylistically adapted)

A parallel effect arises in (34a), the German translation of an English example from Roelofsen 2008:92. Here, a unique referent for *es* 'it' can be inferred (namely, 'the baby'), but no corresponding discourse referent has been explicitly introduced. Therefore, *es* 'it' is acceptable, in line with (35a), whereas *das* 'it' fails to find a discourse referent in *g* for its referential index, as shown in (35b).[12] Naturally, (34b) permits both pronouns, since a discourse referent is explicitly introduced by the indefinite DP *ein Kind* 'a child'.

(34) a. Wenn ich schwanger werde, werde ich {**es** / **#das**} auf jeden Fall behalten.
if I pregnant become will I it DEM on every case keep
'If I get pregnant, I will definitely keep {**it** / **#DEM**} (= the baby).'
b. Wenn ich **ein Kind** kriege, werde ich {**es** / **das**} auf jeden Fall behalten.
if I a child get will I it DEM on every case keep
'If I have **a child**, I will definitely keep {**it** / **DEM**} (= the baby).'
(adapted from Patel-Grosz and Grosz 2010:349)

(35) a. $[\![\mathbf{es}]\!]^g = \iota x[\text{baby}(x)(s_r)]$ *predicts:* ✓(34a) / ✓(34b)
b. $[\![\mathbf{das}]\!]^g = \iota x[\text{baby}(x)(s_r) \,\&\, x = g(1)]$ *predicts:* *(34a) / ✓(34b)

Note that (34a) may be taken to be a reflection of the Overt NP Constraint, which we discussed in section 3.2. There, however, we provided experimental evidence that personal pronouns and demonstrative pronouns pattern alike with respect to an antecedent that is a subpart of a word,

[12] Compare Schwarz 2009:74–75: ''[T]he strong article generally depends on [a linguistic] antecedent.''

as in (36) (= (19)); so why should the difference in (35a–b) not affect the acceptability ratings for (36)?

(36) Wenn eine Studentin {**Führerschein**besitzerin / Besitzerin eines **Führerscheins**} ist,
if a student driver's.license.owner owner of.a driver's.license is
dann trägt sie {**ihn / den**} meist im Geldbeutel mit sich.
then carries she PER DEM mostly in.the wallet with self
'If a student is {a **driver's license** owner / an owner of a **driver's license**}, then she usually carries {**it / DEM**} around in her wallet.'

We suggest the following explanation: the core difference between (34) and (36) is that (34) lacks an antecedent altogether, whereas there is an overt antecedent in (36) (though it is contained in a compound).[13] For present purposes, we conjecture that the compound case, (36), still succeeds in introducing a discourse referent *g(1)* for the driver's license (thus satisfying the anaphoricity requirement of (35b)), which appears to fail in (34). The idea that antecedents in N+N compounds can still introduce or activate discourse referents is corroborated by a range of examples from Ward, Sproat, and McKoon 1991, such as (37), which all appear to introduce actual discourse referents from within a compound (rather than just making some unique individual salient, as in (34a)).

(37) There's a **Thurber** story about **his** maid . . .
(Michael Riley in conversation, 7 September 1988; Ward, Sproat, and McKoon 1991: 451)

Two additional examples that parallel (34a) are given in (38).

(38) a. Hans hat so sehr geblutet, dass {**es** / ***das**} durch den Verband gedrungen ist
Hans has so much bled that it DEM through the bandage soaked is
und sein Hemd verschmutzt hat.
and his shirt stained has
'Hans bled so much that {**it** / ***DEM**} (= the blood) soaked his bandages and stained his shirt.'
(based on Anderson 1971:46, adapted from Patel-Grosz and Grosz 2010:350)

b. Manche Frauen sind schon seit mehr als zwanzig Jahren verheiratet und
many women are already for more than twenty years married and
wissen noch immer nicht, was {**sein** / ***dessen**} Lieblingsbier ist.
know still always not what his DEM's favorite.beer is
'Some women have been married for more than twenty years and still do not know what {**his** / ***DEM**'s} (= the husband's) favorite beer is.'
(based on Roelofsen 2008:122, adapted from Patel-Grosz and Grosz 2010:348)

[13] Note that the experimental investigation in section 3.2 was partly motivated by the unclear judgments with respect to (36); contrastively, native speakers' judgments are very sharp for (34). Of course, it would be optimal if experiments could also be carried out to test the judgments in (34), but this is complicated by the fact that natural examples of the (34a) type are rare to begin with (see Nouwen 2003, Roelofsen 2008). For instance, while *pregnant* seems to license a *baby*-referring pronoun *it*, *orphan* does not seem to license a *parents*-referring pronoun *they*, as shown in (i), making it difficult to establish a baseline.

(i) #Max is an orphan and he deeply misses **them**.
(Postal 1969:206)

Examples that allow for DEMs, but not for PERs, are more difficult to construct. Schwarz (2009) takes ($39B_1$) to show that the strong article is anaphoric, whereas the weak article only encodes uniqueness. The intuition is that there is no single student in ($39B_1$) who is salient enough to count as the unique student in the restrictor situation (i.e., the DP 'the student' in ($39B_1$) requires an anaphoric connection to 'a student' in (39A)); as shown, only the strong article is possible in ($39B_1$). This effect can only be replicated for demonstrative vs. personal pronouns to a limited extent, as shown by our example in ($39B_2$); *von ihm* 'from him' is less acceptable in this case than *von dem*, but the difference is not as strong as in ($39B_1$). A possible explanation can be found in the words of Schwarz (2009:74–75): while ''the weak article is not generally able to pick up a linguistic antecedent,'' apparent counterexamples may simply ''work because the referent of the definite is unique in the appropriate way.'' If it is part of the pragmatic use conditions of pronouns that their intended antecedent is highly salient (e.g., Ariel 1990), this alone may render the antecedent *unique in the appropriate way*; the distinction that surfaces in ($39B_1$) may thus be effaced in ($39B_2$) by the properties of pronouns that set them apart from nonpronominal DPs. (For instance, suitable resource situations $s_r$ for pronouns may be smaller to begin with than resource situations for definite descriptions.)

(39) A: Hast du schon mal **einen Studenten** durchfallen lassen?
have you already once a student fail let
'Have you let **a student** fail a test before?'

$B_1$: Ja. {**Von dem / #Vom**} **Studenten** habe ich nie wieder etwas gehört.
yes of the$_s$ of=the$_w$ student have I never again something heard
'Yes. I never heard **from the student** again.'
(Schwarz 2009:31, stylistically adapted)

$B_2$: Ja. {**Von dem / ?Von ihm**} habe ich nie wieder etwas gehört.
yes of DEM of him have I never again something heard
'Yes. I never heard **from him** again.'

Additional (though weaker) evidence for grouping PERs with weak articles and DEMs with strong articles stems from constructions with relative clauses. Schwarz (2009) shows, on the basis of examples like (40a), that restrictive relative clauses cannot modify a DP that contains a weak article. Correspondingly, our example in (40b) shows that a restrictive relative clause cannot generally modify a personal pronoun. (Both examples are acceptable with a nonrestrictive appositive relative clause.)[14]

(40) a. Fritz ist jetzt {**in dem / #im**} **Haus**, das er gebaut hat.
Fritz is now in the$_s$ in=the$_w$ house that he built has
'Fritz is now **in the house** that he built.'
(Schwarz 2009:286, based on Hartmann 1978:77)

b. Ein Lehrer belohnt immer {**den / #ihn**}, der aufzeigt.
a teacher rewards always DEM him who raises.his.hand
'A teacher always rewards **him** (= the pupil) who raises his hand.'

[14] Another possible exception to our generalization is Elbourne's (2013:205–209) *Voldemort phrases*, but these clearly exhibit a specialized use of restrictive relative clauses, which is archaic and not productive (see Zobel 2014).

A full explanation for the pattern in (40) is beyond the scope of this article; Schwarz (2009: 286–288) himself merely hints at a solution. One possible explanation may be that restrictive relative clauses must be syntactically licensed (or even selected) by a $D_{deix}$ head, which only occurs with strong determiners. Evidence that such syntactic licensing relationships are at least involved in the case of the PER/DEM distinction stems from the fact that PERs (as opposed to DEMs, which take the shape of a definite determiner) cannot combine with an overt NP, as shown in (41a) vs. (41b).

(41) a. er (*Tisch)
he table
'it (*table)'
b. der (Tisch)
DEM/the table
'it/the table'

Furthermore, DEMs differ from PERs in that only DEMs seem to be able to strand complement PPs of their elided NPs, such as *von Maria* 'of Maria' in (42a) and (42b). The idea here is that the complement NP of the pronoun in the second conjunct of (42a–b) is *Vater von Maria* 'father of Maria', from which the PP *von Maria* 'of Maria' has been extracted prior to NP-deletion. We take *von Maria* 'of Maria' to be a complement of the N *Vater* 'father', for which we assume the relational meaning in (42c).

(42) a. Der Vater von Otto ist gekommen, aber {**der** / ***er**} [$_{PP}$ von Maria] nicht.
the father of Otto is come but DEM PER of Maria not
b. Der Vater von Otto ist gekommen, aber [$_{PP}$ von Maria] {**der** / ***er**} nicht.
the father of Otto is come but of Maria DEM PER not
'Otto's father came, but Maria's [father] didn't.'
c. $[\![[_N \text{ Vater}]]\!] = \lambda x . \lambda y. \lambda s . y \text{ is a father of } x \text{ in } s$

In sum, DEMs can combine with restrictive relative clauses (40b), overt NPs (41b), and stranded complements of the elided head noun (42a–b), while PERs cannot do so. The generalization thus emerges that PERs require their entire complement NP (including potential restrictive relative clauses and complements of relational nouns) to be null; by contrast, DEMs can optionally combine with either a null or an overt complement NP, and DEMs also allow for parts of their complement NP (such as restrictive relative clauses and complements of relational nouns) to be overt when the core NP is null. Nothing that we have said so far derives this generalization, but it is plausible that the deficiency of PERs imposes a requirement for their NP complement to also be deficient in a suitable way (here, null). It is orthogonal to the main goal of this article to fully develop this idea, so we conclude by pointing out one evident obstacle, which is that weak articles do occur with an overt NP complement, setting them apart from PERs in this respect.

As a final piece of evidence for assimilating DEMs to strong articles (and PERs to weak articles), note that Schwarz (2009:22–23) points out two parallels between strong articles and DEMs. First, DEMs, (43a), pattern with strong articles, (43b), and not with weak articles, (43c),

in that DEMs never contract with a preposition. Observe that noun phrases like *Mann* 'man' typically combine with the strong article, (43b), whereas noun phrases like *Bürgermeister* 'mayor' combine with the weak article, (43c). This is because contexts rarely single out a unique man in the same way they may single out a unique mayor.[15]

(43) a. Peter hat {**bei dem** / ***beim**} angerufen.
Peter has by DEM by=DEM called
'Peter called him.'
b. Peter hat {**bei dem** / ***beim**} Mann angerufen.
Peter has by $the_s$ by=$the_s$ man called
'Peter called the man.'
c. Peter hat **beim** Bürgermeister angerufen.
Peter has by=$the_w$ mayor called
'Peter called the mayor.'
(Schwarz 2009:22–23, adapted)

Second, if we assume that DEMs and relative pronouns are one and the same (see Wiltschko 1998, Trutkowski and Weiß 2016), we can attest that relative pronouns pattern with the strong article (which does not contract) rather than with the weak article, as in (44). (Note that PERs cannot function as relative pronouns in present-day German.)

(44) Fritz wohnt jetzt in dem Haus, {**von dem** / ***vom**} er schon seit Jahren
Fritz lives now in the house of RP of=RP he already since years
schwärmt.
raves
'Fritz now lives in the house that he has been raving about for years.'
(Schwarz 2009:22, stylistically adapted)

So far, we have argued that PERs contain a weak determiner, whereas DEMs contain a strong determiner. We have also argued that this distinction correlates with a structural asymmetry: namely, PERs contain less structure than DEMs.

In the remainder of this section, we briefly discuss the range of uses that pronouns exhibit. So far, we have not explicitly differentiated between referential uses, bound uses, and ''donkey'' uses. It is worth pointing out that each of these uses is compatible with our analysis. Since this compatibility has been covered to some extent in the preceding literature, we will not recapitulate the analyses in detail, but simply point out relevant sources. First, the referential use requires no further explanation (see also Elbourne 2013:197–201). Second, ''donkey'' uses involve pronouns that covary with a non-c-commanding indefinite antecedent, as in the classic example in (45), where *it* covaries with the donkeys that are quantified over.

[15] Since word forms that can serve as PERs never contract with prepositions, it is difficult to compare PERs and DEMs in this respect.

(45) Every man who owns **a donkey** beats **it**.
(based on Geach 1962:117; e.g., Heim 1982:44)

One of Schwarz's (2009) core contributions is to show that nonpronominal DPs can have covarying ''donkey'' uses both with the weak article (marked by contraction with the preposition) and with the strong article (which does not contract); this is illustrated in (46). It should thus not come as a surprise that both PERs and DEMs allow for ''donkey'' readings, as in (47); see the discussion in Schwarz 2009 concerning the analysis of donkey sentences in such a system.[16]

(46) Jeder Mann, der ein Haus **mit Garten** gekauft hat und die meiste Zeit zu Hause
every man that a house with garden bought has and the most time at home
verbringt, arbeitet viel {**im** / **in dem**} **Garten**.
spends works much in = the$_w$ in the$_s$ garden
'Every man that bought a house **with a garden** and spends most of his time at home works a lot in the **garden**.'
(Schwarz 2009:45, stylistically adapted)

(47) Wenn ein Bauer **einen Esel** hat, dann schlägt er **ihn / den**.
if a farmer a donkey has then beats he PER DEM
'If a farmer owns **a donkey**, then he beats **it**.'
(Wiltschko 1998:172, stylistically adapted)

The most surprising implication of our analysis may be that bound pronouns are also analyzed as bound definite descriptions (both in the case of bound PERs and in the case of bound DEMs; see Hinterwimmer 2015:67). This, again, should not be surprising, since we take it to be established that there are bound definite descriptions, as in (48) (see Schlenker 2005 for a discussion of the licensing conditions of bound definite descriptions).

(48) John fed **no cat of Mary's** before **the cat** was bathed.
(Elbourne 2013:126)

Elbourne (2013:196) demonstrates that bound pronouns and bound definite descriptions can be analyzed identically, involving the binding of a situation variable rather than the binding of an individual variable. In this vein, the truth conditions that Elbourne derives for (49a) can be stated informally as in (49b), where *every* quantifies over situations and not over individuals (see also Büring 2004).

(49) a. Every actress loves **her** (= **the actress's**) mother.
b. Every minimal situation $s_b$ (part of the evaluation situation $s$) that contains an actress $x$ can be extended into a situation $s_e$ in which $x$ loves the unique mother of **the unique actress in $s_b$**.

[16] Note that since our analysis for PERs (such as *er* 'he' and *ihn* 'him') and DEMs (such as *der* 'he' and *den* 'him') is based on Schwarz 2009, it also inherits the following property of Schwarz's system. While situational uniqueness is independently required for weak and strong articles (and thus for PERs and DEMs), donkey sentences with DEMs also require dynamic binding of the anaphoric index that they contain (see Schwarz 2009:274–276 on strong article definites). While this may seem uneconomical, Schwarz points out that such a hybrid system has a predecessor in Chierchia 1992, 1995 and may well be required independently.

Note that Elbourne (2013:196) only assumes the ''weak article'' variant, as opposed to the ''strong article'' variant, which also contains an anaphoric index; that is, (49b) states the truth conditions for a sentence that contains a bound PER, (50a), or for a nonpronominal DP with a weak article.

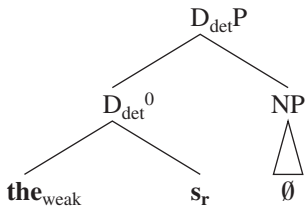
(50) a. $[\![\text{PER}]\!]^g = \iota x[[\![\mathbf{NP_n}]\!]^g(x)(s_r)]$
b. $[\![\text{DEM}]\!]^g = \iota x[[\![\mathbf{NP_n}]\!]^g(x)(s_r) \ \& \ x = g(1)]$
where $s_r$ abbreviates $g(s_r)$, and $[\![\boldsymbol{NP_n}]\!]^g$ represents the denotation of the null NP

For bound DEMs, (50b), and for bound nonpronominal DPs with a strong article, we need to make the additional assumption that the pronoun's situation variable and the pronoun's individual variable are cobound by the same quantifier; see Büring 2004:46, (44a–b) for an LF that involves the binding of situation variables as well as the binding of individual variables; this LF is of the same type that is required here.

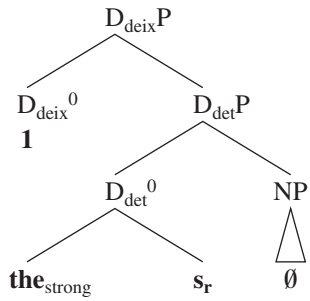
## 5 Structural Asymmetry Meets Structural Economy

The structural asymmetry among PERs and DEMs that we have argued for is repeated in (51)(= (30)). In section 4, we presented arguments that PERs contain a weak article while DEMs contain a strong article.

(51) a. *Personal pronoun / PER (**er**)*




b. *Demonstrative pronoun / DEM (**der**)*




We now provide additional motivation for the assumption that PERs and DEMs differ in structural complexity (with PERs containing a single DP, and DEMs containing DP shells). Specifically, it is a core prediction of our proposal in (51) that the distribution of the two pronoun types reflects structural economy constraints such as (52), which we posit as a generalized version of Schlenker's (2005:391) Minimize Restrictors! Predecessors of (52) are Chomsky's (1981:65) Avoid Pronoun and Cardinaletti and Starke's (1999:198) Minimise Structure (see also Katzir 2011).[17]

(52) *Minimize DP!*
An extended NP projection $\alpha$ is deviant if $\alpha$ contains redundant structure, that is, if
a. there is an extended NP projection $\beta$ that contains fewer syntactic nodes than $\alpha$,[18]

[17] For now, we leave it open whether Minimize DP! is an economy principle that is part of grammar proper, or a (Gricean) pragmatic principle, as proposed by Schlenker (2005:388), who suggests that Minimize NP! may be an instantiation of Levinson's (1998) Maxim of Minimization (related to Grice's Maxim of Manner; see Schwarz 2009:283).

[18] For present purposes, it is sufficient to assume that all syntactic nodes matter for the purpose of (52a). Future research needs to establish whether there is a class of syntactic nodes that can be ignored by (52a).

b. $\beta$ is grammatical and has the same denotation as $\alpha$ (= Referential Irrelevance), and
c. using $\alpha$ instead of $\beta$ does not serve another purpose (= Pragmatic Irrelevance).

In sections 5.1–5.3, we show that the distribution of DEMs vs. PERs traces pragmatic effects that are similar (if not identical) to the ones that Schlenker (2005) observes for the distribution of full DPs vs. pronouns.

Note that the perspective that we take is radically different from the perspective taken by Bosch, Rozario, and Zhao (2003), Bosch and Umbach (2007), Hinterwimmer and Bosch (2014), and Hinterwimmer (2015), in the following sense. These authors argue that DEMs come with a meaning component that bans them from certain environments; specifically, Bosch, Rozario, and Zhao (2003), Bosch and Umbach (2007), and Hinterwimmer (2015) argue for an *antitopicality* presupposition that DEMs have and PERs lack, while Hinterwimmer and Bosch (2014) argue for an *antilogophoricity* component that DEMs have and PERs lack. As a consequence, they predict that DEMs should always be acceptable unless they are blocked. We take the opposite view: we propose (much in the spirit of Cardinaletti and Starke's (1999:198) Minimise Structure) that DEMs are ruled out by default, since Minimize DP! will generally block them. This explains the overall markedness of DEMs (e.g., Bosch, Rozario, and Zhao (2003) attest that the ratio of DEMs to PERs in a written corpus is approximately 1 to 8). As a direct consequence, we do not need to explain when DEMs are unacceptable, since this is the default. By contrast, we need to explain when DEMs are acceptable, in accordance with (52b) and (52c).

Note that we do not claim to have an exhaustive understanding of pragmatic (ir)relevance (see Schlenker 2005:391 for a discussion of the open-endedness of pragmatic irrelevance). However, in the remainder of this section, we document that the same pragmatic effects that Schlenker (2005) documents in connection with Minimize Restrictors! carry over to the licensing of DEMs in German: emotivity (section 5.1), disambiguation (section 5.2), and register (section 5.3).

### *5.1 Pragmatic Relevance I: Emotivity*

A useful set of examples to show Minimize DP! at work is provided by Hinterwimmer (2015), though he does not connect it to structural economy constraints. The central pattern is given in (53) vs. (54). First, (53) shows that the use of a DEM instead of a PER is deviant when there is a single possible antecedent for the pronoun. We attribute this effect to Minimize DP!

(53) Gestern hatte **Paul** eine gute Idee.
yesterday had Paul a good idea
{**Er** / ??**Der**} beschloss, Maria in die Oper einzuladen.
he DEM decided Maria in the opera to.invite
'Yesterday **Paul** had a good idea. **He** decided to invite Maria to the opera.'
(Hinterwimmer 2015:89, stylistically adapted)

However, demonstrative pronouns can be used to signal positive or negative emotivity, an effect that Davis and Potts (2010) and Potts and Schwarz (2010) attribute to a correlation of marked forms and marked utterances, based on Horn's (1984) ''division of pragmatic labor.'' We do not

aim at a new explanation for this emotive effect. Since, in our analysis, the distinction between DEMs and PERs boils down to the presence vs. absence of an anaphoric index, the emotivity effect does not directly follow from the meaning of DEMs that we have proposed (i.e., the presence of an anaphoric index does not entail emotivity). We thus assume that emotivity is in need of a pragmatic explanation, as Davis and Potts (2010) and Potts and Schwarz (2010) argue. Note, however, as these authors show, that this emotivity effect seems to be a crosslinguistically robust property of marked pronouns (and demonstrative pronouns in particular).

Crucially, as soon as the context gives rise to an expression of emotivity (e.g., by way of an exclamation), the DEM becomes acceptable, as in (54) (vs. (53)). This is in line with (52c): the DEM here serves to emphasize the emotivity of the utterance and thus has a pragmatic effect, which is why Minimize DP! does not rule it out.

(54) Gestern hatte **Paul** eine gute Idee.
yesterday had Paul a good idea
{**Er / Der**} hat einfach immer die besten Ideen!
he DEM has simply always the best ideas
'Yesterday **Paul** had a good idea. **He** simply always has the best ideas!'
(Hinterwimmer 2015:90, stylistically adapted)

The contrast in (53) vs. (54) parallels Schlenker's (2005:388) discussion of the distribution of pronouns vs. emotive nonpronominal DPs (such as epithets).

### *5.2 Pragmatic Relevance II: Disambiguation*

A second licensing context of DEMs involves disambiguation. By now, it has been firmly established that DEMs cannot select the most prominent antecedent (e.g., the current aboutness topic) whenever there are two possible antecedents (see Reinhart 1995, Bosch, Rozario, and Zhao 2003, Bosch and Umbach 2007, Kaiser and Trueswell 2008). A classic example of this constraint is given in (55b), where *der* 'he' cannot refer to *Hans*, since it cannot refer to the current aboutness topic (see Hinterwimmer 2015). Notably, while (55a) exhibits an ambiguity (with a plausible subject bias for the personal pronoun *er*; see also the literature on so-called implicit causality, going back to Garvey and Caramazza 1974), (55b) is not ambiguous.

(55) a. **Hans**$_1$ wollte mit **Paul**$_2$ joggen, aber **er**$_{1/2}$ war krank.
Hans wanted with Paul jog but he was sick
b. Hans$_1$ wollte mit **Paul**$_2$ joggen, aber **der**$_2$ war krank.
Hans wanted with Paul jog but DEM was sick
'**Hans** wanted to go jogging with **Paul**, but **he** was sick.'
(adapted from Bosch, Rozario, and Zhao 2003)

Let us first discuss the antitopicality property of DEMs that surfaces in (55b), since this is often taken to be a central property of DEM. Hinterwimmer (2015) encodes this antitopicality property as a lexical presupposition of DEMs; in his approach, DEMs are undefined if the null NP that they contain corresponds to the NP contained in the current aboutness topic. Crucially, such

an approach does not capture the fact that similar patterns arise in languages that exhibit a null vs. overt contrast, such as Catalan, Italian, and Spanish (e.g., Alonso-Ovalle et al. 2002, Carminati 2002, Mayol 2010, Mayol and Clark 2010, Filiaci 2016, Frana to appear). In such languages, null pronouns tend to refer to prominent antecedents, whereas overt pronouns exhibit a preference for nonprominent antecedents, akin to the antitopicality of DEMs.[19] Mayol and Clark's (2010) game-theoretic analysis of parallel effects in Romance null/overt pronouns derives distributions that are similar to (55a–b) from communicative principles without stipulating an antitopicality presupposition in the semantics of the pronouns.

We follow Mayol and Clark (2010) and differ from authors such as Bosch, Rozario, and Zhao (2003), Bosch and Umbach (2007), and Hinterwimmer (2015) in that we do not take antitopicality to be a defining property of DEMs. By contrast, we assume that antitopicality arises whenever a structurally more complex pronoun competes with a structurally less complex pronoun; that is, this phenomenon goes beyond the PER/DEM distinction and covers the null/overt distinction as well. A relevant non-German example stems from Czech, in (56). As indicated, native speakers report that only the null pronoun can refer to the current aboutness topic (here, *Věra*), whereas overt personal pronouns (*ona*) and DEMs (*ta*) pattern alike in that they cannot refer to the aboutness topic.

(56) *Czech*
**Věra**$_1$ chtěla jít běhat s **Mariií**$_2$, ale {***pro***$_{1/?2}$ / **ona**$_{2/*1}$ / **ta**$_{2/*1}$} byla
Vera wanted go.INF run.INF with Marie but *pro* she DEM was
nemocná.
sick
'**Vera** wanted to go jogging with **Marie**, but **she** was sick.'

Such broader paradigms follow from Mayol and Clark's (2010) view that the distribution of pronouns in Romance languages (Catalan, Italian, and Spanish) arises from independent communicative principles, modeled in a game-theoretic approach. The core idea can be summarized as follows (for the formal game-theoretic implementation, see Mayol and Clark 2010:792–795). Speakers and hearers intend to maximize the probability of mutual understanding while keeping production cost and processing cost as low as possible. In order to maximize *payoff* (i.e., achieve the most optimal understanding with the least effort), speakers will use the least costly expression in those communicative situations that have the highest prior probability (e.g., when they intend to refer to the most prominent referent), and they will use more costly expressions in communicative situations with lower prior probability (e.g., when they intend to refer to less prominent referents). The perceived antitopicality of DEMs that compete with PERs (and of overt pronouns that compete with null pronouns) can thus be taken to result from independent communicative principles, and it does not need to be stipulated as part of the semantics of DEMs (and overt pronouns).

[19] The question arises whether the ban against prominent antecedents for DEMs is stronger than, say, the ban against prominent antecedents for overt pronouns in null subject languages, but this is orthogonal to the main point.

Two comments are in order. First, one may wonder why the antitopicality of ''structurally bigger'' pronouns is perceived to be a more rigid constraint than the preference of ''smaller'' pronouns to select a prominent antecedent. On the one hand, this may be due to a conventionalization of the pragmatic effects that underlie the pronominal distribution. On the other hand, we observe (e.g., in sections 5.1 and 5.3) that even the antitopicality of ''structurally bigger'' pronouns is a violable constraint that disappears in the right circumstances. The second comment concerns the way our constraint Minimize DP! relates to the notion of ''less costly expressions'' that plays a role in a Mayol and Clark–style derivation of antitopicality effects. In this respect, we would like to point out that Minimize DP! captures a pragmatic constraint that directly militates against structurally larger DPs, ruling them out if they fail to serve a purpose; by contrast, the notion of costliness that Mayol and Clark invoke reflects a general preference for the reduction of processing load. While the two notions are clearly related, it has yet to be determined whether they can be merged into one.

Coming back to *disambiguation* as a pragmatic effect that licenses DEMs in accordance with Minimize DP!, the most important aspect of (55a–b) for the present discussion is this: when there are two competing antecedents (such as *Hans* and *Paul* in (55)), the use of a DEM always serves to disambiguate toward the nonprominent antecedent. We present another, parallel example in (57), this time with two pronouns in (57b–d). Observe that (57b) is ambiguous (modulo a subject bias for *er* 'he'), whereas (57c) and (57d) are disambiguated. This means that DEMs can, in fact, be used to disambiguate. As a direct consequence, Minimize DP! permits (57c–d), since disambiguation has pragmatic relevance (Schlenker 2005:387).

(57) a. **Hans**$_1$ wollte **Paul**$_2$ besuchen, . . .
Hans wanted Paul visit
'**Hans** wanted to visit **Paul**, . . .'
b. aber dann hat **er**$_{1/2}$ **ihn**$_{2/1}$ angerufen.
but then has he him called
c. aber dann hat **der**$_2$ **ihn**$_1$ angerufen.
but then has DEM him called
d. aber dann hat **er**$_1$ **den**$_2$ angerufen.
but then has he DEM called
'but then **he** called **him**.'

Moreover, adapting an argument from Schlenker (2005:387), we observe that the acceptability of DEMs decreases when their disambiguating function is eliminated. Consider (58a); here, the PER *seine* 'his' and the DEM *dessen* 'his' seem equally acceptable, owing to the disambiguating function of the DEM. If *seine* is used instead of *dessen*, then (58a) is ambiguous. By contrast, (58b) lacks ambiguity to begin with, since there is only one 3rd person antecedent for *seine*/*dessen.* Consequently, the DEM is perceived to be less acceptable in (58b). Notably, we need to introduce *disambiguation* as a function of DEMs in order to account for contrasts such as (58a) vs. (58b). If we were to assume that the only difference between PERs and DEMs consists in the

antitopicality of DEMs, then (58a) and (58b) should always be equally acceptable, since the neighbor is never the aboutness topic.

(58) a. **Peter**$_1$ war so nervös, dass er$_1$ **einen Nachbarn**$_2$ gebeten hat, {**seine**$_{1/2}$ / **dessen**$_2$}
Peter was so nervous that he a neighbor asked has his DEM's
Geräte auszustecken.
electronic.devices to.unplug
'**Peter** was so nervous that **he** asked **a neighbor** to unplug **his** electronic devices.'

b. Ich war so nervös, dass ich **einen Nachbarn**$_2$ gebeten habe, {**seine**$_2$ / ??**dessen**$_2$}
I was so nervous that I a neighbor asked have his DEM's
Geräte auszustecken.
electronic.devices to.unplug
'I was so nervous that I asked **a neighbor** to unplug **his** electronic devices.'

The observation that a DEM cannot take the most prominent DP as its antecedent, and thus the possibility of using DEMs to disambiguate, carries over from referential uses to all other pronominal uses, such as donkey pronouns (see Hinterwimmer 2015), illustrated in (59), and bound pronouns, in (60).

(59) a. Wenn **ein Bauer**$_1$ **einen Hund**$_2$ besitzt, dann liebt **er**$_{1/2}$ **ihn**$_{2/1}$.
if a farmer a dog owns then loves he him
'If **a farmer** owns **a dog**, then **he** loves **it** / **it** loves **him**.' (*ambiguous*)

b. Wenn **ein Bauer**$_1$ **einen Hund**$_2$ besitzt, dann liebt **der**$_2$ **ihn**$_1$.
if a farmer a dog owns then loves DEM.NOM him
'If **a farmer** owns **a dog**, then **it** loves **him**.' (*not:* #then he loves it)

c. Wenn **ein Bauer**$_1$ **einen Hund**$_2$ besitzt, dann liebt **er**$_1$ **den**$_2$.
if a farmer a dog owns then loves he DEM.ACC
'If **a farmer** owns **a dog**, then **he** loves **it**.' (*not:* #then it loves him)

Examples (60a–c) are particularly interesting, since the more economical variant in (60c), which contains two PERs, is ambiguous to the extent that it appears to be somewhat deviant. By contrast, (60a) and (60b) are both unambiguous and fully acceptable; again, disambiguation licenses the less economical DEMs in line with Minimize DP!

(60) a. **Jeder Student**$_1$ glaubt von **jedem anderen Studenten**$_2$, dass **er**$_1$ schlauer ist
every student believes of every other student that PER smarter is
als **der**$_2$.
than DEM
(from Schwarz 2015:118, attributed to Irene Heim)

b. **Jeder Student**$_1$ glaubt von **jedem anderen Studenten**$_2$, dass **der**$_2$ schlauer ist
every student believes of every other student that DEM smarter is
als **er**$_1$.
than PER

c. ?**Jeder Student**$_1$ glaubt von **jedem anderen Studenten**$_2$, dass **er**$_{1/2}$ schlauer ist
every student believes of every other student that PER smarter is
als **er**$_{2/1}$.
than PER
'**Every student** believes of **every other student** that **he** is smarter than **him**.'

*5.3 Pragmatic Relevance III: Register*

A third pragmatic effect that Schlenker (2005) observes in his discussion of minimization constraints involves the use of particular registers, such as formal speech. Schlenker's argument is as follows: in (61a), the nonpronominal DP *His Majesty* should be unacceptable if it did not have some pragmatic effect; that is, minimization constraints (like our Minimize DP! and Schlenker's Minimize Restrictors!) should block (61a) because of its competition with (61b)—or even (61c) if uttered by the king himself. In example (61a), the intended pragmatic effect appears to consist in marking a particular formal register.

(61) a. **The king of Transylvania**$_1$ requests that **His Majesty**$_1$'s ministers join **His Majesty**$_1$ in Room Rosa Luxemburg.
(slightly adapted from Schlenker 2005:399, (37a))
b. **The king of Transylvania**$_1$ requests that **his**$_1$ ministers join **him**$_1$ in Room Rosa Luxemburg.
c. **I** request that **my** ministers join **me** in Room Rosa Luxemburg.

We will now show that parallel effects can be observed with DEMs. However, the relevant register for DEMs is not formal speech, but colloquial and dialectal speech. The core observation is that German DEMs become more freely admissible in colloquial German (as compared with Standard German) and in regional varieties/dialects of German.

Before we proceed, it is worth emphasizing that it is commonly assumed that different dialects of a language have different grammars (e.g., see Weiß 1998 on the grammar of Bavarian).[20] When we look at colloquial and dialectal German in comparison to Standard German, then, we may well be comparing different grammars; in each case, we come back to this concern and indicate why pragmatic relevance can still be assumed to play a role within the respective grammar.

First of all, it has often been observed anecdotally that DEMs are more frequent in colloquial German than in Standard German. A representative example provided by Thieroff (2009:404) is shown in (62). For examples like (62b), Thieroff observes that a personal pronoun is the acceptable form in Standard German. By contrast, the use of demonstrative pronouns in identical contexts is ''not rare'' in colloquial German, (62c).[21]

[20] It may even be true for different registers of the same language that each register has its own grammar (see Ariel 2007 for a critical discussion of this idea).

[21] The same observation (i.e., that DEMs replace PERs in colloquial register) is made in German dictionaries such as Duden; see http://www.duden.de/rechtschreibung/der_Demonstrativpronomen#Bedeutung2h (last accessed on 17 August 2015).

(62) a. Gestern habe ich **Frau Lehmann** getroffen.
yesterday have I Ms. Lehmann met
'I met **Ms. Lehmann** yesterday.'
b. *Höflicher / Standardsprachlich* ('more polite / standard register')
**Sie** hat mir erzählt, dass sie bald in Urlaub fährt.
she has me told that she soon in vacation drives
'**She** told me that she's going on a vacation soon.'
c. *Unhöflicher / Umgangssprachlich* ('less polite / colloquial register')
**Die** hat mir erzählt, dass sie bald in Urlaub fährt.
DEM.FEM has me told that she soon in vacation drives
'**She** told me that she's going on a vacation soon.'
(Thieroff 2009:404, his labels, stylistically adapted)

Notably, the two registers allow for the same pronominal paradigms, and thus (62b) and (62c) would presumably be equally grammatical in the colloquial register. We thus propose that the choice of (62c) over (62b) in the colloquial register achieves a pragmatic effect (e.g., of signaling informality or familiarity).

Second, as part of our own investigation, we went beyond colloquial German and investigated a ''micro parallel corpus'' of Standard German, Bavarian, and Swabian, consisting of three adaptations of the cartoon *Asterix and the Magic Carpet* (hereafter, *AMC*).[22] The core observation is illustrated in (64): southern German dialects (such as Swabian and Bavarian) exhibit a tendency to replace Standard German PERs with DEMs. The sentences in (63) and (64) are contained in the same panel of the cartoon, with (64) directly following (63); 'the gods' in (63) is thus the intended antecedent for the plural pronoun in (64).

(63) *Preceding utterance*
a. **Die Götter** sind weniger grausam, als du behauptest! [Standard German]
b. **Göddà** sàn går need àso grausam, wia du åiwei duasd! [Bavarian]
c. **D'Götter** send net so grausam wia de's saesch! [Swabian]
'**The gods** are not as cruel as you always say they are!'
(*AMC*, page 14, panel 8)

What we find in (64b–c) vs. (64a) is that both the Bavarian and Swabian adaptations replace the personal pronoun *sie* 'they' with the demonstrative pronoun, *de* 'those' in Bavarian and *dia* 'those' in Swabian.

[22] Standard German: *Asterix im Morgenland*, Bavarian: *Asterix drendd im Oriendd*, Swabian: *Em Morgenländle*. The use of *Asterix* cartoons as a source of linguistic data was pioneered, to our knowledge, by Thurmair (1989:5n11). She observes that *Asterix* cartoons are known for their careful treatment of language and, for instance, the Standard German editions can be classified as free adaptations (*Nachdichtungen*) of the French original rather than translations.

(64) *Target utterance*

a. **Sie** vermögen diejenigen zu uns zu geleiten, die bereits unterwegs sind,
they.3PL are.able.to those to us to lead who already on.the.road are
um unser Volk zu retten. [Standard German]
in.order our people to save

b. **De** wissen schõ, wias' de Leidl zu uns heafüan, de wo unsà
DEM.3PL know PRT how = they the people to us bring that who our
Voik räddn woin! [Bavarian]
people save want

c. **Dia** helfat scho mit, dia selle do herzombrenga, wo uf am Weg send
DEM.3PL help PRT V.PRT the those to bring.here who on the way are
zom onser Volk retta! [Swabian]
in.order.to our people save
'**They** do know how to bring all those to us who want to save our people.'
(*AMC*, page 14, panel 8)

Notably, both Bavarian and Swabian have a nonclitic personal pronoun *se* 'they', which is the direct counterpart of Standard German *sie* 'they'. Bavarian *se* 'they' is illustrated in (65b) (where Swabian uses a DEM), and Swabian *se* 'they' is illustrated in (66c) (where Bavarian uses a DEM); see also Weiß 1998:87 for an overview of the personal pronouns of Bavarian. Therefore, the use of the DEM in place of a PER cannot be reduced to a simplistic grammatical explanation, such as the purported lack of suitable nonclitic personal pronouns in the dialect. We thus conclude that the overuse of DEMs within Bavarian and Swabian once again serves a pragmatic effect, an intuition that is anecdotally shared by speakers of the respective German dialects.

(65) a. **Sie** brechen auf, den Sänger abzuholen! [Standard German]
they leave V.PRT the singer to.fetch

b. **Se** fliang åb, dàs s'eàhnàn Sänga hoin. [Bavarian]
they fly off so.that they.CL = their singer fetch

c. **Dia** wellat den Barda hola! [Swabian]
DEM.3PL want the bard to.fetch
'**They** are going to fetch the singer!'
(*AMC*, page 37, panel 7)

(66) a. Ein Schiff! Ich glaub, **sie** haben uns gesehen! [Standard German]
a ship I believe they have us seen

b. À Schiff! I glààb går, **de** ham uns gsähng! [Bavarian]
a ship I believe even DEM.3PL have us seen

c. A Schiffle! Ond **se** hend ons glaub gseha! [Swabian]
a ship and they have us I.believe seen
'A ship! And **they** seem to have seen us!'
(*AMC*, page 19, panel 2)

Overall, we coded 59 occurrences of Standard German personal pronouns in *Asterix and the Magic Carpet*.[23] The correspondences between Standard German, Bavarian, and Swabian are summarized in table 1. As the table shows, more than one-third of the Standard German PERs correspond to a DEM in Swabian, (a–b). Roughly half of these correspond to a DEM in Bavarian, (a). This distribution is striking, since both Swabian and Bavarian distinguish full personal pronouns (PER) and clitic personal pronouns (CL) (e.g., Bavarian *ea*/*à* 'he' and Swabian *en*/*n* 'him'), which we group as PER/CL in (b–d).

As a control, we also looked at 28 occurrences of Standard German DEMs in the text. We observed that all 28 correspond to DEMs in Swabian, and 26 of them correspond to DEMs in Bavarian (with 2 PERs in Bavarian). The substitution of DEMs for PERs clearly goes in one direction only, thereby signaling colloquial or dialectal speech.

As in the case of emotivity, our goal is not to derive (or explain) the pragmatic effects that the substitution of DEMs for PERs gives rise to. What is crucial here is that these pragmatic effects, in turn, serve as licensers of DEMs in line with Minimize DP!, since they lend pragmatic relevance to the additional structure that DEMs contain.

### *5.4 Summarizing the Observations from Economy*

In sections 5.1–5.3, we have shown that the licensing of DEMs tracks the same pragmatic effects that Schlenker (2005) observes for the licensing of nonpronominal DPs in lieu of pronouns. The acceptability/unacceptability of DEMs thus correlates with well-established structural minimization principles: DEMs are ruled out for economy reasons unless their use is required—for example, to yield a pragmatic effect such as *marking emotivity* (section 5.1), *disambiguating* (section 5.2), or *triggering pragmatic effects in colloquial/dialectal speech* (section 5.3). The fact that the distribution of DEMs reflects structural economy conditions corroborates the view that DEMs have additional structure that PERs lack.

**Table 1**
Cross-dialectal correspondences of pronouns in *Asterix and the Magic Carpet*

| | Standard German | Swabian | Bavarian | *n* |
|---|---|---|---|---|
| a. | PER | **DEM** | **DEM** | 10 |
| b. | PER | **DEM** | PER/CL | 12 |
| c. | PER | PER/CL | **DEM** | 2 |
| d. | PER | PER/CL | PER/CL | 35 |
| | | | Total | 59 |

[23] Selectional criteria are (a) a counterpart of the pronoun is present in all three adaptations; (b) gender, number, person, and case marking of the pronoun are identical across adaptations; and (c) the pronoun is in the same topological region (front field vs. middle field) across adaptations.

## 6 Alternative Approaches to the Distribution of Demonstrative Pronouns

Now that we have outlined our syntactic, semantic, and pragmatic analysis of demonstrative pronouns (DEMs) and their distribution, it is worth briefly comparing our view with alternative accounts for the distribution of DEMs. Currently, the main alternative is represented by the work of Bosch, Rozario, and Zhao (2003), Bosch and Umbach (2007), and Hinterwimmer (2015). Recall that our view assumes that DEMs are ruled out by default, owing to the structural economy principle Minimize DP!, and that DEMs occur if and only if they are licensed—for example, by making a pragmatic contribution. We can thus call our view a *negative-default approach*. The alternative approach, as advocated by the above-mentioned authors, argues that DEMs are well-formed by default, as long as the presupposition is met that the null NP that they contain is not the most prominent NP in the discourse. We will call this a *positive-default approach*. Hinterwimmer's (2015) original rendering of PERs and DEMs is given in (67) (in the format that we have used throughout this article). The idea here is that DEMs carry a presupposition that their null NP is not identical to the most salient property. The bifurcation in (67b) derives the generalization that DEMs in referential uses and ''donkey'' uses cannot refer to the current aboutness topic, (67bi), and that DEMs in bound uses cannot be bound by the clausal subject, (67bii).

(67) a. $[\![\text{PER}]\!]^g = \iota x[[\![\mathbf{NP_m}]\!]^g(x)(s_r)]$
b. $[\![\text{DEM}]\!]^g = \iota x[[\![\mathbf{NP_m}]\!]^g(x)(s_r) \wedge [\![\mathbf{NP_m}]\!]^g \neq P^*]$
where $P^*$ is the currently most salient property.
i. In *nonbinding configurations*, $P^* = P_{TOP}$, where $P_{TOP}$ is the property denoted by the NP contained in the most recent DP functioning as an aboutness topic.
ii. In *potential binding configurations*, $P^*$ is the property of being (identical to) a variable A-bound by the DP functioning as the grammatical subject of the sentence containing the respective D-pronoun.
(adapted from Hinterwimmer 2015:99, omitting ϕ-features)

To illustrate, the definition of (67bi) is targeted at patterns such as (68a–b), repeated from (55), based on the insight that it is not the grammatical role of the antecedent that matters, but its information-structural role as an aboutness topic, and thus its overall prominence. (In (68), the most salient property would be $P^* = [\lambda x . \lambda s . x \text{ is called Hans in } s]$; compare (3c).)

(68) a. **Hans**$_1$ wollte mit **Paul**$_2$ joggen, aber **er**$_{1/2}$ war krank.
Hans wanted with Paul jog but he was sick
b. Hans$_1$ wollte mit **Paul**$_2$ joggen, aber **der**$_2$ war krank.
Hans wanted with Paul jog but DEM was sick
'**Hans** wanted to go jogging with **Paul**, but **he** was sick.'
(adapted from Bosch, Rozario, and Zhao 2003)

We will not focus on the concrete implementation in (67b), since this represents ongoing research: in recent research, Hinterwimmer and Bosch (2014) provide counterexamples to (67b) and reject

the analysis in (67b) in favor of an *antilogophoricity* presupposition. Instead of discussing (67b), we thus provide a more general comparison of negative- and positive-default approaches.

One core prediction of negative-default approaches (such as ours) is that a DEM that is unacceptable in an utterance will become more acceptable if certain pragmatic factors are introduced, such as emotivity or a colloquial register. This is due to the assumption that DEMs are deviant by default (because of Minimize DP!) and pragmatic licensers can render them acceptable. By contrast, positive-default approaches predict that unacceptability is absolute; that is, manipulations in terms of emotivity or register should not increase acceptability. This follows from the assumption that, while DEMs are acceptable by default, a single presupposition violation should render them unacceptable (whether it amounts to a violation of an antitopicality presupposition or of an antilogophoricity presupposition). A negative-default approach thus predicts that DEMs can only become more acceptable, whereas a positive-default approach predicts that DEMs can only become less acceptable. So far, the data that we have seen favor a negative-default approach. Hinterwimmer (2015:89–90) himself admits that (69) (see (54)) should be ruled out by (67bi), given that Paul is the obvious aboutness topic, and he needs to posit a pragmatic enrichment mechanism to account for this antitopicality obviation.

(69) Gestern hatte **Paul** eine gute Idee.
yesterday had Paul a good idea
**Der** hat einfach immer die besten Ideen!
DEM has simply always the best ideas
'Yesterday **Paul** had a good idea. **He** simply always has the best ideas!'
(Hinterwimmer 2015:90, stylistically adapted)

The same issue carries over to the use of DEMs in colloquial German, as in (70b–c); Thieroff (2009) presents this as another example in which a DEM (here, *dem* 'him.DAT') can replace a PER (here, *ihm* 'him.DAT') in the colloquial register, but not in the standard register. Crucially, the most plausible information-structural interpretation is one where the speaker's uncle is the current aboutness topic (in the sense of Reinhart 1981) for (70b–c). This follows, since (70b–c) are preceded by the sentence 'I have news from my uncle', (70a), which is roughly equivalent to 'I tell you something about my uncle', a context sentence that is known to enforce subsequent aboutness (here, of the speaker's uncle) (see Frey 2004:158, Hinterwimmer 2015:71). From the perspective of Hinterwimmer's (2015) approach, the acceptability of (70c) in colloquial German thus poses difficulties parallel to (69).

(70) a. Ich habe Neuigkeiten von **meinem Onkel**.
I have news from my uncle
'I have news from **my uncle**.'
b. *Höflicher / Standardsprachlich* ('more polite / standard register')
**Ihm** ist das Portemonnaie gestohlen worden.
him.DAT is the wallet stolen been
'His wallet was stolen **from him**.'

c. *Unhöflicher / Umgangssprachlich* ('less polite / colloquial register')
**Dem** ist das Portemonnaie gestohlen worden.
DEM.MASC.DAT is the wallet stolen been
'His wallet was stolen **from him**.'
(Thieroff 2009:404, his labels, stylistically adapted)

In brief, the problem with earlier positive-default approaches is that the purportedly unacceptable configurations always improve when pragmatic relevance (e.g., emotivity or colloquial register) is added.[24] By contrast, this is exactly what we would expect from the perspective of a negative-default approach. It remains to be seen if positive-default approaches can be formulated that do not encounter these difficulties.

Moreover, from a more global, comparative perspective, negative-default approaches seem to have a clear advantage over positive-default approaches. First, consider the following data: the effects that arise with PERs and DEMs quite generally carry over to other languages that have a parallel contrast. To give one example, the observation that DEMs cannot refer to the current aboutness topic carries over to demonstrative pronouns in Portuguese, French, and Hebrew, as shown in (71). (For discussion, see Kaiser and Trueswell 2008.)

(71) a. *(Brazilian) Portuguese*
**A Maria**$_1$ quer ir correr com a **Su**$_2$, mas {**ela**$_{1/?2}$ / **esta**$_{2/*1}$} está doente.
the Maria wanted to.go to.run with the Sue but she DEM was sick
'**Maria** wanted to go running with **Sue**, but **she** was sick.'

b. *French*
**Valerie**$_1$ a voulu aller faire du jogging avec **Béa**$_2$, mais {**elle**$_{1/2}$ / **celle-ci**$_{2/*1}$}
Valerie has wanted to.go to.do of jogging with Béa but she PROX.DEM
était malade.
was sick
'**Valerie** wanted to go jogging with **Béa**, but **she** was sick.'

c. *Hebrew*
**Meri**$_1$ ratzta la'rootz im **Soo**$_2$, aval {**hi**$_{1/2}$ / **ha-hi**$_{2/*1}$ / **zot**$_{2/*1}$} hayta xolah.
Mary wanted to.run with Sue but she the-she this.FEM was sick
'**Mary** wanted to go running with **Sue**, but **she** was sick.'

[24] Similar problems arise for Hinterwimmer and Bosch's (2014) idea that DEMs have an antilogophoricity presupposition. Example (i) contains a DEM (the subject of *der kann das alles* 'he knows it all') that clearly refers to the current attitude holder, that is, to the subject of *glaubt* 'believes'. So here, too, adjustments must be made in order to derive the full range of phenomena.

(i) **Der**$_1$ glaubt, **der**$_1$ kann das alles – **dem**$_1$ zeige ich's jetzt.
DEM believes DEM can.do that all to.DEM show I = it now
'**He**$_1$ believes **he**$_1$ knows it all – I'll show **him**$_1$.'
(http://www.akademie-fuer-ganzheitsmedizin.de/heilpraktiker-pruefungsprotokoll.php, last accessed on 21 March 2016)

Moreover, we have already mentioned that other languages exhibit parallel contrasts between null and overt pronouns. This is illustrated for Kutchi Gujarati in (72a) and for Czech in (72b). Recall that Czech treats overt personal pronouns (*ona* 'she') on a par with demonstrative pronouns (*ta*), in that both of them exhibit antitopicality, (72b).

(72) a. *Kutchi Gujarati*
**John**$_1$-ne **Paul**$_2$ saathe dhorva javu thu, pun {***pro***$_{1/\#2}$ / **i**$_{2/*1}$} thandithi aavi
John-DAT Paul with run.INF go AUX but *pro* he cold came
thi.
AUX
'**John** wanted to go running with **Paul**. But **he** had a cold.'

b. *Czech*
**Věra**$_1$ chtěla jít běhat s **Marií**$_2$, ale {***pro***$_{1/?2}$ / **ona**$_{2/*1}$ / **ta**$_{2/*1}$} byla
Vera wanted go.INF run.INF with Marie but *pro* she DEM was
nemocná.
sick
'**Vera** wanted to go jogging with **Marie**, but **she** was sick.'

While future research needs to provide an in-depth analysis of each individual language that exhibits such contrasts, these data clearly challenge a positive-default approach, such as Hinterwimmer's (2015): such an approach models the difference between PERs and DEMs in German as a lexicalized (and thus idiosyncratic) presupposition of DEMs. It is unclear why the same observation should then carry over, not only to PER/DEM contrasts in other languages, but also to null/overt contrasts. By contrast, in a negative-default approach, such as the one we propose, antitopicality arises as an epiphenomenon (as discussed in section 5.2). The core idea is that the DEM variant (and overt variant) is unacceptable when referring to the most prominent antecedent in each of the examples in (71) (and (72)) since independent communicative principles dictate that the least costly form must be used when a speaker aims at encoding meanings with the highest prior probability. From this perspective (as, in fact, from the perspective of Minimize DP!),[25] we expect the PER/DEM contrasts and the null/overt contrasts to largely reflect the same effects and tendencies.

---

Note that, by standard assumptions, the matrix subject in (i) c-commands the embedded subject, as shown by the possibility of a quantifier-variable reading in (ii) and (iii).

(ii) **Jeder**$_i$ möchte gern glauben, **er**$_i$ sei unheimlich beliebt.
'**Everybody**$_i$ likes to believe **he**$_i$ is incredibly popular.'
(Reis 1997:139)

(iii) Heutzutage meint doch **jeder**$_i$, **er**$_i$ kann über Nacht zum Star werden.
'Nowadays, **everybody**$_i$ believes **he**$_i$ can become a star overnight.'
(Freywald 2009:121)

[25] Note that an application of Chomsky's (1981:65) Avoid Pronoun (a predecessor of our Minimize DP!) to the null vs. overt distinction in Italian was proposed by Haegeman (1991:217n8).

## 7 Conclusion

We have argued for a syntactic analysis of personal pronouns (PERs) and demonstrative pronouns (DEMs), which assumes that both are DPs that contain a null NP and a definite determiner, yet differ in their additional functional layer (where DEMs project more structure than PERs). This syntactic view is complemented by a semantics in which PERs contain a weak article (in the sense of Schwarz 2009), whereas DEMs contain a strong article (plus a referential index); therefore, the latter are anaphoric in a way that the former are not. Finally, we have proposed that the distributional properties of PERs and DEMs (both the overlap and the differences in their distribution) follow from well-established structural economy constraints in the pragmatics, which we capture by means of a minimization constraint, Minimize DP!

## References

Alonso-Ovalle, Luis, Susana Fernández-Solera, Lyn Frazier, and Charles Clifton, Jr. 2002. Null vs. overt pronouns and the topic-focus articulation in Spanish. *Journal of Italian Linguistics* 14:151–169.

Anderson, Stephen R. [pseudonymously as ''P. R. N. Tic Douloureux'']. 1971. A note on one's privates. In *Studies out in left field*, ed. by Arnold M. Zwicky, Peter H. Salus, Robert I. Binnick, and Anthony L. Vanek, 45–51. Edmonton: Linguistic Research.

Ariel, Mira. 1990. *Accessing noun phrase antecedents.* London: Routledge.

Ariel, Mira. 2007. A grammar in every register? The case of definite descriptions. In *The grammar-pragmatics interface: Essays in honor of Jeanette K. Gundel*, ed. by Nancy A. Hedberg and Ron Zacharski, 265–292. Amsterdam: John Benjamins.

Bernstein, Judy. 1997. Demonstratives and reinforcers in Romance and Germanic languages. *Lingua* 102: 87–113.

Bosch, Peter, Tom Rozario, and Yufan Zhao. 2003. Demonstrative pronouns and personal pronouns: German *der* vs. *er*. In *Proceedings of the EACL 2003 Workshop on the Computational Treatment of Anaphora*, 61–68. East Stroudsburg, PA: Association for Computational Linguistics.

Bosch, Peter, and Carla Umbach. 2007. Reference determination for demonstrative pronouns. In *Intersentential pronominal reference in child and adult language*, ed. by Dagmar Bittner and Natalia Gargarina, 39–51. ZAS Papers in Linguistics 48. Berlin: ZAS.

Büring, Daniel. 2004. Crossover situations. *Natural Language Semantics* 12:23–62.

Büring, Daniel. 2011. Pronouns. In *Semantics: An international handbook of natural language meaning, vol. 2*, ed. by Klaus von Heusinger, Claudia Maienborn, and Paul Portner, 971–995. Berlin: Mouton de Gruyter.

Cardinaletti, Anna, and Michal Starke. 1999. The typology of structural deficiency: A case study of the three classes of pronouns. In *Clitics in the languages of Europe*, ed. by Henk C. van Riemsdijk, 145–234. Berlin: Walter de Gruyter.

Carminati, Maria Nella. 2002. The processing of Italian subject pronouns. Doctoral dissertation, University of Massachusetts, Amherst.

Chierchia, Gennaro. 1992. Anaphora and dynamic binding. *Linguistics and Philosophy* 15:111–183.

Chierchia, Gennaro. 1995. *Dynamics of meaning: Anaphora, presupposition, and the theory of grammar.* Chicago: University of Chicago Press.

Chomsky, Noam. 1981. *Lectures on government and binding.* Dordrecht: Foris.

Cooper, Robin. 1979. The interpretation of pronouns. In *Selections from the Third Groningen Round Table*, ed. by Frank Heny and Helmut Schnelle, 61–92. Syntax and Semantics 10. New York: Academic Press.

Davis, Christopher, and Christopher Potts. 2010. Affective demonstratives and the division of pragmatic labor. In *Logic, language, and meaning: 17th Amsterdam Colloquium. Revised selected papers*, ed. by Maria Aloni, Harald Bastiaanse, Tikitu de Jager, and Katrin Schulz, 42–52. Berlin: Springer.

Déchaine, Rose-Marie, and Martina Wiltschko. 2002. Decomposing pronouns. *Linguistic Inquiry* 33: 409–442.

Elbourne, Paul. 2005. *Situations and individuals.* Cambridge, MA: MIT Press.

Elbourne, Paul. 2013. *Definite descriptions.* Oxford: Oxford University Press.

Filiaci, Francesca. 2016. Restrictions on the interpretation of null and overt subjects in Italian and Spanish and the Morphological Ambiguity hypothesis. In *The impact of pronominal form on interpretation*, ed. by Patrick G. Grosz and Pritty Patel-Grosz, 319–346. Berlin: de Gruyter.

Frana, Ilaria. To appear. The role of discourse prominence in the resolution of referential ambiguities: Evidence from co-reference in Italian. In *Semantics and processing*, ed. by Jan Anderssen, Keir Moulton, Florian Schwarz, and Cherlon Ussery. University of Massachusetts Occasional Papers in Linguistics 37. Amherst: University of Massachusetts, Graduate Linguistic Student Association. Available at http://people.umass.edu/ilaria/Research_files/UMOPila%28final%29.pdf. (Last accessed 7 November 2016.)

Frey, Werner. 2004. A medial topic position for German. *Linguistische Berichte* 198:153–190.

Freywald, Ulrike. 2009. Kontexte für nicht-kanonische Verbzweitstellung: V2 nach *dass* und Verwandtes. In *Koordination und Subordination im Deutschen*, ed. by Veronika Ehrich, Christian Fortmann, Ingo Reich, and Marga Reis, 113–134. Hamburg: Buske.

Garvey, Catherine, and Alfonso Caramazza. 1974. Implicit causality in verbs. *Linguistic Inquiry* 5:459–464.

Geach, Peter. 1962. *Reference and generality.* Ithaca, NY: Cornell University Press.

Grosz, Patrick G., Pritty Patel-Grosz, Evelina Fedorenko, and Edward Gibson. 2015. Constraints on donkey pronouns. *Journal of Semantics* 32:619–648.

Haegeman, Liliane. 1991. *Introduction to Government and Binding Theory.* Oxford: Blackwell.

Hankamer, Jorge, and Ivan Sag. 1976. Deep and surface anaphora. *Linguistic Inquiry* 7:391–426.

Hartmann, Dietrich. 1978. Verschmelzungen als Varianten des bestimmten Artikels? In *Sprache in Gegenwart und Geschichte: Festschrift für Heinrich Matthias Heinrichs*, ed. by Dietrich Hartmann, Hansjürgen Linke, and Otto Ludwig, 68–81. Cologne: Böhlau.

Heim, Irene. 1982. The semantics of definite and indefinite noun phrases. Doctoral dissertation, University of Massachusetts, Amherst.

Heim, Irene. 1990. Donkey pronouns and donkey anaphora. *Linguistics and Philosophy* 13:137–177.

Heim, Irene. 1991. Artikel und Definitheit. In *Semantik: Ein internationales Handbuch der zeitgenössischen Forschung*, ed. by Arnim von Stechow and Dieter Wunderlich, 487–535. Berlin: de Gruyter.

Heim, Irene, and Angelika Kratzer. 1998. *Semantics in generative grammar.* Oxford: Blackwell.

Hinterwimmer, Stefan. 2015. A unified account of the properties of German demonstrative pronouns. In *NELS 40: Semantics Workshop on Pronouns*, ed. by Patrick Grosz, Pritty Patel-Grosz, and Igor Yanovich, 61–107. Amherst: University of Massachusetts, Graduate Linguistic Student Association.

Hinterwimmer, Stefan, and Peter Bosch. 2014. Demonstrative pronouns and perspective. Paper presented at the workshop Pronouns in Embedded Contexts at the Syntax-Semantics Interface, University of Tübingen, 7–9 November.

Horn, Laurence R. 1984. Toward a new taxonomy for pragmatic inference: Q-based and R-based implicature. In *Meaning, form, and use in context: Linguistic applications*, ed. by Deborah Schiffrin, 11–42. Washington, DC: Georgetown University Press.

Ihsane, Tabea, and Genoveva Puskás. 2001. Specific is not definite. *Generative Grammar in Geneva* 2: 39–54.

Jacobson, Pauline. 2001. Variable free semantics (and direct compositionality). Ms., Brown University, Providence, RI. Available at http://www.cog.brown.edu/people/jacobson/uclaminicourse-PJ.pdf.

Kaiser, Elsi, and John Trueswell. 2008. Interpreting pronouns and demonstratives in Finnish: Evidence for a form-specific approach to reference resolution. *Language and Cognitive Processes* 23:709–748.

Katzir, Roni. 2011. Morphosemantic mismatches, structural economy, and licensing. *Linguistic Inquiry* 42: 45–82.

Kratzer, Angelika. 2009. Making a pronoun: Fake indexicals as windows into the properties of pronouns. *Linguistic Inquiry* 40:187–237.

Laenzlinger, Christopher. 2005. French adjective ordering: Perspectives on DP internal movement types. *Lingua* 115:645–689.

Leu, Tom. 2008. The internal syntax of determiners. Doctoral dissertation, New York University.

Levinson, Stephen. 1998. Minimization and conversational inference. In *Pragmatics, vol. 4*, ed. by Asa Kasher, 545–612. London: Routledge.

Liberman, Mark, and Richard Sproat. 1992. The stress and structure of modified noun phrases in English. In *Lexical matters*, ed. by Ivan A. Sag and Anna Szabolcsi, 131–181. Stanford, CA: CSLI Publications.

Lobeck, Anne. 1995. *Ellipsis: Functional heads, licensing, and identification.* Oxford: Oxford University Press.

Mayol, Laia. 2010. Refining salience and the Position of Antecedent Hypothesis: A study of Catalan pronouns. In *Proceedings of the 33rd Annual Penn Linguistics Colloquium*, ed. by Jon Scott Stevens, 127–136. University of Pennsylvania Working Papers in Linguistics 16. Philadelphia: University of Pennsylvania. Available at http://repository.upenn.edu/pwpl/vol16/iss1/15.

Mayol, Laia, and Robin Clark. 2010. Pronouns in Catalan: Games of partial information and the use of linguistic resources. *Journal of Pragmatics* 42:781–799.

Nouwen, Rick. 2003. *Plural pronominal anaphora in context.* Utrecht: LOT.

Olsen, Susan. 1986. *Wortbildung im Deutschen.* Stuttgart: Kröner.

Parsons, Terry. 1978. Pronouns as paraphrases. Ms., University of Massachusetts, Amherst.

Patel-Grosz, Pritty, and Patrick G. Grosz. 2010. On the typology of donkeys: Two types of anaphora resolution. In *Proceedings of Sinn und Bedeutung 14*, ed. by Martin Prinzhorn, Viola Schmitt, and Sarah Zobel, 339–355. Vienna: University of Vienna.

Postal, Paul. 1966. On so-called 'pronouns' in English. In *Report on the Seventeenth Annual Roundtable Meeting on Linguistics and Language Studies*, ed. by Francis Dinneen, 177–206. Washington, DC: Georgetown University Press.

Postal, Paul. 1969. Anaphoric islands. In *Papers from the Fifth Regional Meeting of the Chicago Linguistic Society*, ed. by Robert Binnick, Alice Davison, Georgia Green, and Jerry Morgan, 205–239. Chicago: University of Chicago, Chicago Linguistic Society.

Potts, Christopher, and Florian Schwarz. 2010. Affective 'this'. *Linguistic Issues in Language Technology* 3:1–30.

R Core Development Team. 2008. *R: A language and environment for statistical computing.* Vienna: R Foundation for Statistical Computing.

Reinhart, Tanya. 1981. Pragmatics and linguistics: An analysis of sentence topics. *Philosophica* 27:53–94.

Reinhart, Tanya. 1995. Interface strategies. OTS Working Papers in Linguistics. Utrecht: Utrecht University.

Reis, Marga. 1997. Zum syntaktischen Status unselbständiger Verbzweit-Sätze. In *Sprache im Fokus: Festschrift für Heinz Vater zum 65. Geburtstag*, ed. by Christa Dürscheid, Karl Heinz Ramers, and Monika Schwarz, 121–144. Tübingen: Niemeyer.

Roelofsen, Floris. 2008. Anaphora resolved. Doctoral dissertation, Institute for Logic, Language, and Computation, Amsterdam.

Sag, Ivan, and Jorge Hankamer. 1984. Toward a theory of anaphoric processing. *Linguistics and Philosophy* 7:325–345.

Sauerland, Uli. 2007. Flat binding: Binding without sequences. In *Interfaces + recursion = language? Chomsky's Minimalism and the view from syntax-semantics*, ed. by Uli Sauerland and Hans-Martin Gärtner, 197–253. Berlin: Mouton de Gruyter.

Schlenker, Philippe. 2005. Minimize Restrictors! (Notes on definite descriptions, Condition C and epithets). In *Proceedings of SuB 9*, ed. by Emar Maier, Corien Bary, and Janneke Huitink, 385–416. Nijmegen: Nijmegen Centre of Semantics. Available at http://semanticsarchive.net/Archive/zY3ZDk2N/sub9proc.pdf.

Schwarz, Florian. 2009. Two types of definites in natural language. Doctoral dissertation, University of Massachusetts, Amherst.

Schwarz, Florian. 2015. Topics & situations: Comments on Hinterwimmer. In *NELS 40: Semantics Workshop on Pronouns*, ed. by Patrick Grosz, Pritty Patel-Grosz, and Igor Yanovich, 109–126. Amherst: University of Massachusetts, Graduate Linguistic Student Association.

Tasmowski-De Ryck, Liliane, and S. Paul Verluyten. 1982. Linguistic control of pronouns. *Journal of Semantics* 1:323–346.

Thieroff, Rolf. 2009. Grammatik. In *WAHRIG: Richtiges Deutsch leicht gemacht*, ed. by the Wahrig-Redaktion, 204–599. Gütersloh: wissenmedia.

Thurmair, Maria. 1989. *Modalpartikeln und ihre Kombinationen.* Tübingen: Niemeyer.

Trutkowski, Ewa, and Helmut Weiß. 2016. When personal pronouns compete with relative pronouns. In *The impact of pronominal form on interpretation*, ed. by Patrick G. Grosz and Pritty Patel-Grosz, 135–166. Berlin: de Gruyter.

Vries, Mark de. 2012. The mysterious specific indefinite. In *Theories of everything: In honor of Ed Keenan*, ed. by Thomas Graf, Denis Paperno, Anna Szabolcsi, and Jos Tellings, 420–426. UCLA Working Papers in Linguistics 17. Los Angeles: UCLA, Department of Linguistics.

Ward, Gregory. 1997. The battle over anaphoric ''islands'': Syntax vs. pragmatics. In *Directions in functional linguistics*, ed. by Akio Kamio, 199–219. Amsterdam: John Benjamins.

Ward, Gregory, Richard Sproat, and Gail McKoon. 1991. A pragmatic analysis of so-called anaphoric islands. *Language* 67:439–473.

Weiß, Helmut. 1998. *Syntax des Bairischen: Studien zur Grammatik einer natürlichen Sprache.* Tübingen: Niemeyer.

Wiltschko, Martina. 1998. On the syntax and semantics of (relative) pronouns and determiners. *Journal of Comparative Germanic Linguistics* 2:143–181.

Zobel, Sarah. 2014. Voldemort phrases in generic sentences: Seemingly impersonal uses of 3rd person singular pronouns. Paper presented at SinFonIJA VII, University of Graz, 25–27 September.

**Sample Texts**

[STANDARD GERMAN] Uderzo, Albert, translated by Gudrun Penndorf. 1987. *Asterix 28: Asterix im Morgenland.* Stuttgart: Ehapa.

[SWABIAN] Uderzo, Albert, translated by Klaus Mühlsteffen. 1996. *Asterix Mundart Band 4: Schwäbisch II – Em Morgenländle.* Stuttgart: Ehapa.

[BAVARIAN] Uderzo, Albert, translated by Wolfgang Fuchs and Sebastian Schuhbeck. 1998. *Asterix Mundart Band 23: Boarisch II – Asterix drendd im Oriendd.* Stuttgart: Ehapa.

**Corpora and Corpus Tools**

Baroni, Marco, Silvia Bernardini, Adriano Ferraresi, and Eros Zanchetta. 2009. The WaCky Wide Web: A collection of very large linguistically processed web-crawled corpora. *Language Resources and Evaluation* 43:209–226. [DeWaC]

The German Reference Corpus *DeReKo*, at the Institut für Deutsche Sprache, Mannheim, http://www.ids-mannheim.de/kl/projekte/korpora. [DeReKo]

*University of Oslo*
*Department of Linguistics and Scandinavian Studies*
*P.O. Box 1102 Blindern*
*0317 Oslo*
*Norway*

*pritty.patel-grosz@iln.uio.no*
*p.g.grosz@iln.uio.no*