

Replication of R-pronouns in German dialects

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Abstract

A considerable number of German dialects exhibit doubled R-pronouns with pronominal adverbs (*dadamit*, *dadafür*, *dadagegen*). At first sight, this type of *in situ* replication seems to be completely redundant since its occurrence is independent of R-pronoun-extraction/movement. The main purpose of this paper is to account for (i) the difference between dialects with regard to replication of R-pronouns and (ii) why an (apparently redundant) process of replication occurs. Following Müller (2000a), who considers R-pronouns to be a repair phenomenon, we present an analysis in the framework of Optimality Theory. We argue that replication of R-pronouns is a consequence of different rankings of universal requirements like e.g. the *Inclusiveness Condition*, the *Lexical Integrity Hypothesis* and *Antilocality* and that the interaction of these constraints results in the occurrence of replication.

1. Introduction

German has two different kinds of pronouns in prepositional phrases. Either a regular personal pronoun follows the preposition (1), or the R-pronoun *da* appears in front of the preposition (2).

- (1) a. Fritz hat gestern [PP an [NP sie]] gedacht.
Fritz has yesterday at her thought
'Fritz thought of her yesterday.'
b. Maria hat damals [PP für [NP ihn]] gestimmt.
Maria has back.then for him voted
'Maria voted for him back then.'

(Müller 2000a: 139)

- (2) a. Fritz hat gestern [PP da-r-an] gedacht.
Fritz has yesterday *da-r-at* thought
'Fritz thought of that yesterday.'

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- b. Maria hat damals [pp da-für] gestimmt.
 Maria has back.then da-for voted
 'Maria voted for that back then.' (Müller 2000a: 140)

The term *R-pronoun* (originally coined by van Riemsdijk 1978 for similar elements in Dutch) refers to the elements *da* 'there' and the interrogative counterpart *wo* 'where'. In combination with a preposition, these form what is called a *pronominal adverb* or alternatively a *prepositional adverb*. *Da* and *wo* are termed R-pronouns since an epenthetic *r* is inserted if the adjacent preposition starts with a vowel (e.g. *da/wo-r-an*), see (3a) and (3b). There is also a distributionally more restricted form with the deictic *hier* 'here' (3c).

- (3) a. Fritz hat gestern da-r-an gedacht.
 Fritz has yesterday da-r-at thought
 'Fritz thought of that yesterday.'
 b. Wo-r-an hat Fritz gestern gedacht?
 wo-r-at has Fritz yesterday thought
 'What did Fritz think of yesterday?'
 c. Maria hat damals hier-für gestimmt.
 Maria has back.then here-for voted
 'Maria voted for this back then.'

For the most part, regular pronouns and R-pronouns are in complementary distribution. Wherever a regular pronoun can occur, an R-pronoun cannot (4) and vice versa (5).

- (4) a. Fritz hat gestern [pp an [NP sie]] gedacht.
 Fritz has yesterday at her though
 'Fritz thought of her, yesterday.'
(sie = Maria)
 b. *Fritz hat gestern [pp da-r-an] gedacht.
(da = Maria)
- (5) a. *Fritz hat gestern [pp an [NP es]] gedacht.
 Fritz has yesterday at it thought
 'Fritz thought of it, yesterday.'
(es das Spiel 'the game')
 b. Fritz hat gestern [pp da-r-an] gedacht.
(da = das Spiel 'the game')

- (8) a. Maria musste noch oft [PP da-r-an] denken.
 Maria must.PST still often da-r-at think
 'Maria had to still often think of it.'
 (*da* = *der Vorschlag* 'the proposal',
 **der Hausmeister* 'the caretaker',
 ?*der Esel* 'the donkey')
- b. Maria musste noch oft [PP an ihn] denken.
 Maria must.PST still often at 3SG.MASC think
 'Maria had to still often think of him.'
 (*ihn* = *der Vorschlag* 'the proposal',
der Hausmeister 'the caretaker',
der Esel 'the donkey')
- (9) a. Ich bin [PP da-mit] nicht richtig zufrieden.
 I am da-with not right satisfied
 'I am not really content with it.'
 (*da* = *der Vorschlag* 'the proposal',
 **der Hausmeister* 'the caretaker',
 ?*der Esel* 'the donkey')
- b. Ich bin [PP mit ihm] nicht richtig zufrieden.
 I am with 3SG.MASC not right satisfied
 'I am not really content with him'
 (*da* = *der Vorschlag* 'the proposal',
der Hausmeister 'the caretaker',
der Esel 'the donkey')
- (10) a. Maria musste noch oft [PP da-r-an] denken.
 Maria must.PST still often da-r-at think
 'Maria had to still often think of it.'
 (*da* = *die Ausstellung* 'the exhibition',
 **die Frau* 'the woman',
 ?*die Katze* 'the cat')
- b. Maria musste noch oft [PP an sie] denken.
 Maria must.PST still often at 3SG.FEM think
 'Maria had to still often think of her.'
 (*sie* = *die Ausstellung* 'the exhibition',
die Frau 'the woman',
die Katze 'the cat')

- (11) a. Alle waren [PP da-von] sehr beeindruckt.
 all were *da*-by very impressed
 ‘Everyone was very impressed by it.’
 (*da* = *die Ausstellung* ‘the exhibition’,
 **die Frau* ‘the woman’,
 ?*die Katze* ‘the cat’)
- b. Alle waren [PP von ihr] sehr beeindruckt.
 all were by 3SG.FEM very impressed
 ‘Everyone was very impressed by her.’
 (*ihr* = *die Ausstellung* ‘the exhibition’,
die Frau ‘the woman’,
die Katze ‘the cat’)

The overall generalisation in Müller (2000a) is the following:

- (12) In a PP there is
- obligatorily an NP pronoun with animate referents,
 - optionally an NP pronoun or an R-pronoun with inanimate non-neuter referents,
 - obligatorily an R-pronoun with *es*.

The important difference between regular NP pronouns and R-pronouns is that, while the former can never be dislocated out of the embedding PP (13), the latter are freely extractable and can therefore strand the preposition (14).

- (13) a. *Fritz hat sie₁ gestern [PP an t₁] gedacht.
 Fritz has her yesterday at thought
 ‘Fritz thought of her yesterday.’
- b. *Ihn₁ hat Maria damals [PP für t₁] gestimmt.
 him has Maria back.then for voted
 ‘For him Maria voted back then.’
- c. *Wen₁ hat Maria damals [PP für t₁] gestimmt?
 Whom has Maria back.then for voted
 ‘Whom did Maria vote for back then?’ (Müller 2000a: 3)
- (14) a. Fritz hat da₁ gestern [PP t₁ (dr)-an] gedacht.
 Fritz has *da* yesterday *dr*-at thought
 ‘Fritz thought of it yesterday.’

- b. Da₁ hat Maria damals [PP t₁ für] gestimmt.
da has Maria back.then for voted
 ‘Maria voted for it back then.’
- c. Wo₁ hat Maria damals [PP t₁ für] gestimmt?
wo has Maria back.then for voted
 ‘What did Maria vote for back then?’ (Müller 2000a: 3)

This phenomenon has already been discussed extensively in the literature, see e.g. Fanselow (1983, 1991), Koster (1987), Grewendorf (1989), Bayer (1990, 1991), Oppenrieder (1990), Trissler (1993, 1999) and Müller (1991, 2000a).¹

2. R-pronoun replication

There is a related observation, however, that has not yet received much attention in the theoretical literature. In numerous varieties of German, we find that extraction of the R-pronoun does not strand the preposition. Instead, there are two exponents of the R-pronoun present, one inside the PP and another in the *Mittelfeld* (15a) or in the *Vorfeld* (15b, c).²

- (15) a. Fritz hat da nicht [PP da-mit] gerechnet.
 Fritz has *da* not *da*-with reckoned
 ‘Fritz did not reckon with that.’
- b. Da hat Maria damals [PP da-für] gestimmt.
da has Maria back.then *da*-for voted
 ‘Maria voted for it back then.’
- c. Da wusste Karl nichts [PP da-von]
da knew Karl nothing *da*-of
 ‘Karl did not know anything of that.’ (Swabian German)

These doubling structures are considered colloquial in the first edition of the Duden Grammar (Duden 1959). While still mentioned in the third edition (Duden 1973), they no longer appear in subsequent editions. However, they are briefly described in the more theoretically oriented grammar of Eisenberg (1999) and in the diachronic literature, where they are often discussed in

¹For discussion of the analogous phenomenon in Dutch see van Riemsdijk (1978).

²All examples tagged *Swabian German* are my own (K.B.). For the sake of convenience and since the examples are representative for many more German varieties, they have been adapted to Standard German orthography.

conjunction with stranding (see e.g. Paul 1919, Behaghel 1899, 1932, Dal 1966, Lockwood 1968).³ Fleischer (2002) calls the construction exemplified by (15) *Distanzverdopplung* ‘distance doubling’. It has been reported for Westphalian, Rhenish Franconian, Middle Bavarian, Swabian, Thuringian, Upper Saxonian, Berlin, High Alemmanic, Lower Alemannic, North Bavarian, East Franconian, Lower Franconian, Silesian, Central Hessian, Moselle Franconian and numerous other dialects (for an even finer-grained areal distribution, see Fleischer 2002).

In most of these varieties, the R-pronoun is also doubled if it is not extracted. The two tokens then appear adjacent to each other and the preposition. The prepositional phrase can either stay *in situ* (26a) or be dislocated as a whole constituent (16b, c). Fleischer (2002) calls this construction *Kurze Verdopplung* ‘short doubling’. Extraction of both tokens while stranding the preposition is ungrammatical in all dialects (16d).

- (16) a. Fritz hat nicht [_{PP} da-da-mit] gerechnet.
 Fritz has not *da-da*-with reckoned
 ‘Fritz did not reckon with that.’
- b. [_{PP} Da-da-für] hat Maria damals gestimmt.
da-da-for has Maria back.then voted
 ‘Maria voted for it back then.’
- c. [_{PP} Da-da-von] wusste Karl nichts.
da-da-of knew Karl nothing
 ‘Karl did not know anything of that.’
- d. *Da₂ da₁ wusste Karl nichts [_{PP} t₂ t₁ von].
da da knew Karl nothing of
 ‘Karl did not know anything of that.’ (Swabian German)

This short doubling structure is very rarely discussed in German grammars.⁴ It is briefly mentioned in Paul (1919) and Curme (1922) and also in the Duden (2009). However, they only consider pronominal adverbs built from vowel initial prepositions which besides the usual *r*-epenthesis (e.g. *da-r-auf*) often also show a second *d* before the *r* (i.e. *da-dr-auf*) that might be interpreted as a contracted copy of the R-pronoun (i.e. *da-d(a)-r-auf*). However, forms with *-dr-* are generally also possible in dialects that do not allow R-pronoun doubling.

³ An overview over more descriptions of this construction in the dialectology literature is given by Fleischer (2002).

⁴ In the dialectology literature, the short doubling structure is described more often, for references see Fleischer (2002).

The *d* in *-dr-* is therefore most likely not a reduced copy of the R-pronoun. Only Oppenrieder (1990) includes examples like the ones in (16) with consonant initial prepositions.

Doubling (short and distance) does not only apply to declarative pronominal adverbs with *da*, but also to their interrogative counterparts with *wo* 'where'. The examples in (17) show that *wo* behaves like *da* concerning extraction out of PP (stranding the preposition without any doubling) and pied-piping.

- (17) a. Wo_1 hat Fritz nicht [_{PP} t_1 mit] gerechnet?
wo has Fritz not with reckoned
 'What did Fritz not reckon with?'
 b. $Womit_1$ hat Fritz nicht t_1 gerechnet?
 c. Wo_1 hat Maria damals [_{PP} t_1 für] gestimmt?
wo has Maria back.then for voted
 'What did Maria vote for back then?'
 d. $Wofür_1$ hat Maria damals t_1 gestimmt?
 e. Wo wusste Karl nichts [_{PP} t_1 von] ?
wo knew Karl nothing of
 'What did Karl know nothing of?'
 f. $Wovon_1$ wusste Karl nichts?

In the case of interrogative R-pronouns, however, *doubling* does not mean that there are two tokens of *wo* in the sentence, but that *wo* and *da* appear together. The examples in (18) illustrate distance doubling, those in (19) short doubling.

- (18) a. Wo hat Fritz nicht [_{PP} *da*-mit] gerechnet?
wo has Fritz not *da*-with reckoned
 'What did Fritz not reckon with?'
 b. Wo hat Maria damals [_{PP} *da*-für] gestimmt?
wo has Maria back.then *da*-for voted
 'What did Maria vote for back then?'
 c. Wo wusste Karl nichts [_{PP} *da*-von] ?
wo knew Karl nothing *da*-of
 'What did Karl know nothing of?' (Swabian German)
- (19) a. [_{PP} Wo -*da*-mit] hat Fritz nicht gerechnet?
wo-da-with has Fritz not reckoned
 'With what did Fritz not reckon?'

- b. [PP Wo-da-für] hat Maria damals gestimmt?
wo-da-for has Maria back.then voted
 ‘For what did Maria vote back then?’
- c. [PP Wo-da-von] wusste Karl nichts?
wo-da-of knew Karl nothing of
 ‘Of what did Karl nothing?’ (Swabian German)

Instead, sentences that contain two copies of *wo* are ungrammatical (20b, d) (independent of extraction of *wo*).

- (20) a. Wo ist Fritz allergisch [PP da-gegen] ?
wo is Fritz allergic *da-against*
 ‘What is Fritz allergic to?’
- b. *Wo ist Fritz allergisch [PP wo-gegen] ?
wo is Fritz allergic *wo-against*
 ‘What is Fritz allergic to?’
- c. [PP Wo-da-gegen] ist Fritz allergisch?
wo-da-against is Fritz allergic
 ‘To what is Fritz allergic?’
- d. *[PP Wo-wo-gegen] ist Fritz allergisch?
wo-wo-against is Fritz allergic
 ‘To what is Fritz allergic?’ (Swabian German)

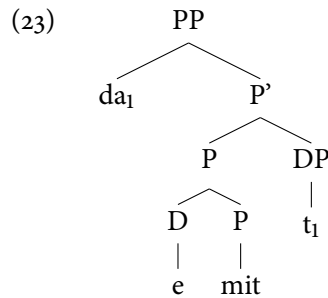
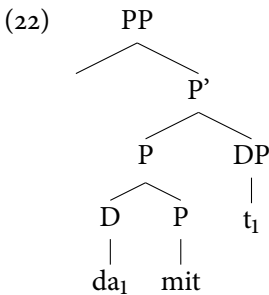
Pronominal adverbs with *hier* ‘here’ behave like those with *wo*. Doubling occurs regardless of whether there is extraction of *hier* (21a) or not (21c). However, the copy in base position is *da* and never a second *hier* (21b, d).

- (21) a. Hier möchte Fritz [PP da-für] bezahlen.
 here wants Fritz *da-for* pay
 ‘Fritz wants to pay for that.’
- b. *Hier möchte Fritz [PP hier-für] bezahlen.
 here wants Fritz here-for pay
 ‘Fritz wants to pay for that.’
- c. Fritz möchte [PP hier-da-für] bezahlen.
 Fritz wants here-*da-for* pay
 ‘Fritz wants to pay for that.’
- d. *Fritz möchte [PP hier-hier-für] bezahlen.
 Fritz wants here-here-for pay
 ‘Fritz wants to pay for that.’ (Swabian German)

3. Analysis

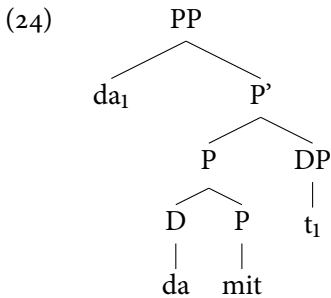
3.1. The structure of R-pronouns and the doubling puzzle

Before we turn to our analysis we want to address the structure of pronominal adverbs. We follow Gallmann (1997), Müller (2000a) and Fleischer (2002) in assuming that R-pronouns are base-generated in the complement position of the preposition (for a different stance on the issue see Oppenrieder 1990, Trissler 1993 and Abels 2003). Since the R-pronoun is never spelled out in this position, it inevitably has to move out of there. Gallmann (1997) proposes that the R-pronoun has two options. It can either incorporate into the preposition (see Baker 1988 for incorporation) or move into the specifier position of the PP. In (22), the R-pronoun *da* has vacated the complement position and incorporated into the preposition resulting in a complex P-head. In (23) *da* has moved up into SpecPP while an empty element has been incorporated into P.



What is the benefit of having these two different structures? First, the stranding option can be easily explained. In the cases where *da* appears in the *Mittelfeld* or in the *Vorfeld*, the structure in (23) is the underlying one. *Da* is simply moved on from its position in SpecPP. This is an advantage compared to previous analyses which are based on incorporation of *da* into the verb (Abraham 1995) or on the concept of direct selection (Trissler 1993). These analyses presuppose verb adjacency of the stranded preposition. This presupposition poses serious problems for data where the preposition appears in the *Mittelfeld* but not at the left edge of the verb complex (for a detailed discussion of these proposals and its theoretical and empirical problems see Fleischer 2002). A desirable consequence of Gallmann's (1997) analysis is that extraction out of SpecPP is completely independent from the position of the verb. The second benefit

that Gallmann (1997) and Fleischer (2002) point out is, that short doubling (*dadamit*) directly follows from the structure proposed in (23). According to Gallmann (1997) and Fleischer (2002), the short doubling structure corresponds to the one in (23) with the difference that there is no empty element incorporated into P, 'sondern noch einmal ein *da*' (Fleischer 2002: 398) (translation: 'but yet another *da* again'). A few pages later, Fleischer (2002) describes the short doubling structure as follows: 'Hier ist neben Inkorporation in P⁰ auch SpecPP besetzt' (Fleischer 2002: 405) (translation: 'As well as incorporation into P⁰, SpecPP is also occupied'). In this description, it seems that the underlying structure is the one in (22) plus *da* in the specifier of PP. Both descriptions lead to the structure in (24).



We agree that the structure in (24), assumed by Gallmann (1997) and Fleischer (2002), is a suitable representation of the short doubling construction. However, we do not agree with the statement that it follows directly or automatically from the possibility of two different movement types (incorporation into P and movement to SpecPP). As far as we understand, Gallmann (1997) and Fleischer (2002) argue in favour of these two different movement types *because* doubling can be derived under this assumption (see Fleischer 2002: 404). To independently justify the existence of two different positions for R-pronouns, Fleischer (2002) offers the argument that only clitic or proclitic pronouns can be incorporated into P⁰ (he regards *dr* in e.g. *da-dr-auf* as a proclitic version of *da* with a reduced vowel). In contrast, full pronouns (like unreduced *da* in e.g. *da-r-auf*) cannot be incorporated into P⁰ and therefore move to SpecPP. We do not see the reason why this should be the case. Furthermore, the distinction between full *da* and clitic *d(a)* seems somewhat *ad hoc* and the status of *d* in *dr* as a reduced second syntactic token of *da* is at least debatable as already mentioned in section 2 above. But even if this account were right, it

does not provide an answer to the question of why doubling emerges. Under Fleischer's (2002) assumptions, reduced clitic pronouns are always expected to be incorporated into P^0 and full pronouns are expected to move to SpecPP. If we find both positions occupied, then there must have been two R-pronouns to start with, one clitic and one full version. The doubling itself thus remains unexplained. What Fleischer (2002) does not discuss at all is *why* incorporation and Comp-to-Spec movement should both apply to one R-pronoun in one structure and, if they did, how this leads to a doubling of the R-pronoun. The advantage or benefit of having *da* in SpecPP obviously is the fact that it can (still) be extracted out of this position. This is needed for the cases of stranding and for distance doubling. But in the case of short doubling both *da*-elements stay in situ next to the preposition. The proposed structure (24) thus raises the following questions:

- (25) a. If *da* does not appear in the *Mittel*- or the *Vorfeld* (i.e. is not extracted out of PP), why should it leave the complement position and move into SpecPP/incorporate into P at all?
- b. If there is an independent reason for *da* to leave the complement position (see e.g. Müller 2000a) and move up to SpecPP, why is incorporation of an additional *da* required or desirable?
Or to put it differently: If extraction of *da* out of the complement position is required, why is incorporation of *da* into P not enough to satisfy this requirement?

Gallmann (1997) and Fleischer (2002) do not address these questions, but at first sight the application of *both* movement types, incorporation and Comp-to-Spec movement, seems to be completely redundant. In our opinion, an analysis of German R-pronouns should ideally account for (i) the difference between the distribution of R-pronouns and regular NP pronouns with regard to their movement properties, (ii) the difference between dialects with regard to replication of R-pronouns and (iii) it should explain why an (apparently redundant) replication process occurs. Issue (i) is addressed by Müller (2000a), which is briefly summarized in section 3.2. Concerning issue (ii), Gallmann (1997) and Fleischer (2002) simply restate the facts: dialects with doubling incorporate 'noch einmal ein *da*' (Fleischer 2002: 398) ('yet another *da* again'), while this option is not available in dialects without doubling. In section 3.3, we will provide an account of the phenomenon of R-pronoun replication which is

in line with Müller's (2000a) account for the distribution of R-pronouns and corroborates the proposed structure for short doubling of Gallmann (1997) and Fleischer (2002). In addition, it will provide an explanation for replication of R-pronouns based on the interaction of conflicting constraints in OT. Dialectal differences will be accounted for in a principled way by rerankings of these constraints.

3.2. R-pronouns vs. regular NP pronouns (Müller 2000a)

In Müller (2000a), R-pronouns are analysed as a repair to what is called the 'Wackernagel-Ross dilemma'. The basic insight is that two well-established constraints of German syntax lead to a dilemma in the case of PP-internal NP pronouns because they cannot both be respected by one and the same pronoun at the same time. The first constraint states that weak NP pronouns need to be in a position at the left periphery of the *Mittelfeld*, an observation that goes back to Wackernagel (1892). That position is consequently called the 'Wackernagel position'. PP-internal weak NP pronouns would thus have to move out of PP into that position. Such a movement, however, is foreclosed by the second constraint that PPs are islands in German. Therefore, nothing that receives case from the preposition can be extracted out of a PP. A weak NP pronoun that starts out as the complement of a PP will inevitably violate one of the two constraints. Such a conflict can be resolved by attributing a greater importance to one of the constraints as implemented by ranking the constraints in an Optimality Theoretic framework (Prince & Smolensky 1993/2004), which is what is done in Müller (2000a). However, as one can easily see from the data above, neither does the NP pronoun move to the Wackernagel position in violation of the PP-island, nor does it stay in the PP in violation of the Wackernagel requirement. What actually happens is that a repair form *da*, the R-pronoun, is substituted. In OT terms, this means that replacing the NP pronoun satisfies both of the two constraints. There must, however, be an even lower ranked constraint, like the Inclusiveness Condition, that punishes *da*-insertion. Since the R-pronoun is by definition not a regular NP pronoun, it is not subject to the Wackernagel constraint and satisfies it vacuously. Additionally, it does not receive case from the preposition and can thus be extracted out of the PP, which explains why displacement of *da* is possible. The kind of NP pronouns that can/must be replaced by the R-pronoun is regulated by a hierarchy of NP pronoun classes which is encoded as a set of

inherently ranked subconstraints. Thus, Müller's (2000a) analysis elegantly derives the distribution of the R-pronoun and its differences compared to the NP pronouns.

3.3. An account of R-pronoun replication

From a very intuitive point of view, one might attribute the existence of *da*-replication to the fact that German disallows preposition stranding (at least Standard German and all German varieties that do not have the stranding option). It seems to be obvious that a second *da* is inserted to prevent the preposition from being stranded in the cases where *da* moves out of the PP due to topicalisation or scrambling. This explanation works well for the distance doubling construction. However, it does not account for short doubling, the case of replication where both copies of the R-pronoun stay inside the PP, see the examples in (16), repeated in (26) below for the reader's convenience.

- (26) a. Fritz hat nicht [_{PP} da-da-mit] gerechnet.
 Fritz has not *da-da*-with reckoned
 'Fritz did not reckon with that.'
- b. [_{PP} Da-da-für] hat Maria damals gestimmt.
da-da-for has Maria back.then voted
 'Maria voted for it back then.'
- c. [_{PP} Da-da-von] wusste Karl nichts.
da-da-of knew Karl nothing
 'Karl did not know anything of that.' (Swabian German)

In these cases, the preposition is never stranded and it is not possible, given the explanation above, to insert a second *da* or rather make a copy of it. Thus, as (26) shows, whatever the reason for replication is, it cannot be dependent on the R-pronoun leaving the PP, i.e. stranding the preposition. We propose that all previous analyses were right to at least some degree and that what actually happens can be explained by a melange of these analyses. Following Müller (2000a), we regard the R-pronoun as a repair form that is not selected by the preposition. It is inserted to avoid a violation of the requirement that elements in the complement position of a head be selected by that head, an assumption rooted in Chomsky's (1981) *Projection Principle*. The R-pronoun therefore cannot stay in its position.

In order to rectify this situation, the R-pronoun can undergo two possible types of movement (following Gallmann 1997 and Fleischer 2002): It can move from its complement position into the specifier of PP or it can incorporate into the P-head. However, we will argue that both possibilities do not come for free but rather conflict with different requirements on R-pronouns and movement operations in general. Concerning Comp-to-Spec movement, the ban on ‘antilocal’ movement (see Grohmann 2003, Abels 2003 and Ticio 2005) forbids movement from complement position into the specifier position within the same phrase. Incorporation, on the other hand, is also costly since, as a consequence, *da* is no longer accessible for further processes like extraction out of the PP (see Lapointe 1981, more detailed explanation below). In sum, we claim that in the case of the derivation of a pronominal adverb conflicting requirements have to be fulfilled. In Optimality Theory (OT), conflicting requirements can be modeled straightforwardly as ranked and violable constraints. Thus, OT is well suited to tackle parts (ii) and (iii) of the aforementioned requirements for an analysis of doubling. Cross-linguistic, or for that matter cross-dialectal, differences can be accounted for by simply reranking universal constraints. Our analysis of R-pronoun replication will thus be formulated in Optimality Theory. In (27) and (28) the already mentioned requirements *complement selection* and *antilocality* are reformulated as violable OT-constraints:

- (27) CO(MPLEMENT)-SEL(ECTION)
Assign a violation for every element in a complement position of a head that is not selected by that head.
- (28) ANTILOCALITY (A-LOC)
Assign a violation for every movement from complement position into specifier position of the same head.

A further requirement we want to consider is the *Lexical Integrity Hypothesis*, first proposed by Lapointe (1981). It states that syntactic operations do not have access to the internal structure of words. It has been reformulated in a number of different ways, e.g. as part of *Revised Lexical Integrity* stating that ‘syntactic rules have no access to the internal structure of X⁰ categories’ (Spencer 2005: 81). According to this principle, extraction out of complex heads (excorporation) is not allowed. We reformulate this principle as a violable constraint against traces in complex heads (29).

(29) * $[_{X^0} t]$

Assign a violation for every trace inside a complex head.

The fourth constraint that influences the derivation is one against the creation of copies, *COPY. It can be understood as a more specific version of the Inclusiveness Condition (Chomsky 1995) prohibiting the introduction of material not present in the numeration.

(30) *COPY

Assign a violation for every copy of an element.

Crucially, we assume that copies are not created as a consequence of movement, as is the case in the Copy Theory of Movement. Rather, GEN consists of the basic minimalist operations Merge and Agree, plus a dedicated operation Copy, as argued for by Müller (this volume).

The last constraint we introduce concerns the status of incorporated elements with respect to their referential properties. R-pronouns within pronominal adverbs always refer either deictically or anaphorically/cataphorically, see examples in (31) (taken from Duden 2009: 581).

(31) a. Leg(e) die Decke bitte darauf!

lay the blanket please thereon

'Please put the blanket on there.'

(deictic)

b. Das Thema ist noch nicht erschöpft; darüber müssen wir
the topic is yet not tired.out; there.over must we
nocheinmal sprechen.

again speak

'The topic isn't exhausted yet; we have to talk about it again some time.'

(anaphoric)

c. Sie dachte nicht daran, aufzuräumen.

she thought not there.on tidy.up-INF

'She refused to tidy up.'

(cataphoric)

An R-pronoun can refer to different categories. Anaphoric reference is possible to nouns, noun phrases or whole clauses. In the case of cataphoric reference, the pronominal adverb can be the correlate of a subordinate clause, a main clause or of a group of infinitivals (for examples see Duden 2009: 581). In the literature, it has already been observed that anaphoric reference to incorporated

nouns is strongly disfavoured (Mithun 2010). For the Austronesian language of the Philippines, Kapamganpam, Mithun notes that ‘there is no evidence that the incorporated nominal ever serves as an antecedent for subsequent reference. When speakers wish to refer to an entity evoked in this construction, the noun is repeated’ (Mithun 2010: 11). The same observation holds for Mohawk, the Iroquoian language of northeastern North America and for Central Alaskan Yup’ik, an Eskimo-Aleut language of Alaska. Note that these three languages are genetically and areally unrelated.

Krifka et al. (1995) provide evidence that this generalization also holds for German. They describe German as ‘a language in which noun incorporation is not infrequent. Here we find that with the incorporated nouns, anaphoric reference to objects *is* blocked indeed [...]’. They give the following example (our glosses).

- (32) Hans fuhr Mercedes_i. *Er_i war grau.
 Hans drove Mercedes. He was grey.
 ‘Hans always drove Mercedes cars. It was grey.’

Krifka et al. (1995: 88) claim the following about the above example:

The noun *Mercedes* [...] is incorporated, even though this is not reflected in the orthography. (For example, it is a bare word stem which cannot be extended to a phrase – e.g. **Hans fuhr schnellen Mercedes*; this is a clear sign of incorporation [...]).

It seems that the failure to establish a reference relation into incorporation structures is a common property of language. Furthermore, it seems plausible to attribute this to a more general referential non-accessibility of incorporated elements. Hence, it also holds for pronominal elements like R-pronouns. Consequently, we assume that incorporated (pro)nominal elements can neither refer nor be referred to by other elements. The resulting demand that anaphorically, cataphorically or deictically referring elements need to be outside of a complex head in order to be referential is formulated as the constraint *PRONOUN-INCORPORATION.


- (33) *PR(ONOUN)-INC(ORPORATION)
 Assign a violation for every anaphorically or cataphorically referring element that is entirely included in a complex head.

In contrast to standard global optimization processes, which assume that optimization applies to complete structures (see Grimshaw 1997, Pesetsky 1998, Legendre et al. 1998 among others), the optimization which is assumed here, is more local in the sense that it applies iteratively to small portions of structures. We assume that evaluation takes place at every phrase (see Müller 2000*b*, Heck & Müller 2000, 2013*a,b*, Fischer 2004 and Heck 2008). Replication of R-pronouns is then the result of the following ranking of the above-mentioned constraints:

- (34) CO-SEL \gg A-LOC \gg * $[_{X^0} t]$ \gg *PR-INC \gg *COPY

The competition for the evaluation at PP looks as in (35) for the cases where the pronominal adverb stays inside the PP.

- (35) *Optimization of the PP in short doubling*


[_{PP} mit da]	CO-SEL	A-LOC	* $[_{X^0} t]$	*PR-INC	*COPY
a. [_{PP} mit da]	*!				
b. [_{PP} da ₁ [_{P'} mit t ₁]]		*!			
c. [_{PP} [_P da ₁ mit] t ₁]]				*!	
d. [_{PP} da ₁ [_{P'} [_P t ₁ mit] t ₁]]]			*!		
 e. [_{PP} da ₁ [_{P'} [_P da ₁ mit] t ₁]]]					*

Candidate (a) is completely faithful and therefore violates CO-SEL because the R-pronoun in the complement position of the preposition is not selected by it. In candidate (b) the R-pronoun has undergone movement from the complement to the specifier of the preposition in violation of A-LOC. Candidate (c) is out because the pronoun *da* has incorporated into the preposition and is now fully included in the complex P head, i.e. there is no part or token of the R-pronoun that is outside of that complex head and thereby accessible to the syntax. Furthermore, in candidate (d) the R-pronoun has first incorporated into the preposition and then excorporated into the specifier of PP leaving a trace inside the complex head in violation of * $[_{X^0} t]$. This leaves candidate (e) as the optimal candidate, where incorporation is followed by excorporation with the latter leaving behind a copy rather than a trace. This candidate satisfies CO-SEL because the unselected element is no longer in P's complement position

and A-LOC because there is no direct movement from complement to specifier. In order to satisfy *PR-INC, it leaves behind a copy rather than a trace which violates only the lower ranked constraint *COPY.

When there is movement of the R-pronoun such as scrambling or topicalisation, there is a general optionality between movement of the R-pronoun alone or movement of the whole PP (pied-piping). Following Heck (2008), this optionality goes back to an optionality of feature percolation. The movement-triggering feature that is present on the R-pronoun may or may not percolate up to the PP-level. If it percolates up, the whole PP is displaced. If it does not percolate, only the R-pronoun is moved out of SpecPP. A high-ranked constraint such as TOP(IC)-CRIT(ERION) ensures that elements that bear movement-triggering features actually move to a position where they are licensed. This movement crucially has to take place via intermediate movement steps (i.e. specifiers of intervening phase heads) due to the Phase Impenetrability Condition (Chomsky 2000, 2001). Direct movement out of the complement of a preposition without going via its specifier is thus not possible even though it would satisfy CO-SEL without incurring any violations of the other four constraints. Also, since evaluation takes place at every phrase, the PP undergoes optimization anyway, before anything is extracted from it. Any movement-requiring constraints like the Topic Criterion will be violated by all candidates at this point (36). Therefore, topicalisation and scrambling movements do not interfere with any of the five constraints that regulate PP-internal affairs. Hence, whether the R-pronoun leaves the PP or the whole PP moves has no effect on whether a copy is made or not.

(36) Optimization of the PP in distance doubling/pied-piping

	TOP-CRIT	CO-SEL	A-LOC	*[X ⁰ t]	*PR-INC	*COPY
[_{PP} mit da ^[+top]]						
a. [_{PP} mit da ^[+top]]	*	*!				
b. [_{PP} da _i ^[+top] [_{P'} mit t ₁]	*		*!			
c. [_{PP} [_P da _i ^[+top] mit] t ₁]	*				*!	
d. [_{PP} da _i ^[+top] [_{P'} [_P t ₁ mit] t ₁]]	*			*!		
 e. [_{PP} da _i ^[+top] [_{P'} [_P da _i mit] t ₁]]	*					*

Another crucial point of our analysis can be observed in candidate (e): copying of an element does not affect structure-building or movement-triggering features. If it did, we would expect the lower copy of the R-pronoun to move into a position where a [+topic] feature is licensed just as the original does. This, however, never happens as shown by the ungrammaticality of (37).

- (37) **Da*₁ hat Fritz *da*₁ nicht [_{PP} *t*₁ mit] gerechnet.
da has Fritz *da* not with reckoned
 ‘Fritz did not reckon with that.’


This assumption is further corroborated by doubling data of interrogative R-pronouns like (38). Here, the copy of the *wh*-R-pronoun that stays low does not show any overt exponence of the [+*wh*] feature which leads us to conclude that it does not bear such a feature at all.

- (38) *Wo* ist Fritz allergisch [_{PP} *da*-gegen] ?
 where is Fritz allergic *da*-to
 ‘What is Fritz allergic to?’

In other words, *wo* is just *da* with a [+*wh*] feature.⁵ The derivation evaluation of the PP of (38) would thus be (39).

⁵ Gallmann (1997) presents a similar proposal concerning interrogatives: in order to account for the identity of R-pronouns in the doubling cases he assumes spec-head-agreement between the R-pronoun that has moved to SpecPP and the element that has incorporated into the complex P-head. However, as we have already seen, if SpecPP is filled by the interrogative *wo*, in the complex P-head it is always *da* that appears, never *wo*. He concludes: ‘Als Kongruenzmorpheme sind *da*-, *dar*-, *dr*- offenbar hinsichtlich Interrogativität unterspezifiziert’ (Gallmann 1997: 46) (translation: As agreement morphemes *da*-, *dar*-, *dr*- are obviously underspecified with regard to interrogativity).


(39) Optimization of the PP in doubling of an interrogative R-pronoun

[_{PP} gegen da ^[+wh]]	WH-CRIT	CO-SEL	A-LOC	*[_{X⁰} t]	*PR-INC	*COPY
a. [_{PP} gegen da ^[+wh]]	*	*!				
b. [_{PP} da ₁ ^[+wh] [_{P'} gegen t ₁]	*		*!			
c. [_{PP} [_P da ₁ ^[+wh] gegen] t ₁]	*				*!	
d. [_{PP} da ₁ ^[+wh] [_{P'} [_P t ₁ gegen] t ₁]]	*			*!		
 e. [_{PP} da ₁ ^[+wh] [_{P'} [_P da ₁ gegen] t ₁]]	*					*

3.4. Dialects without replication


As already pointed out above, many (mainly northern) dialects do not show R-pronoun replication. Instead, they display preposition stranding in the cases where the R-pronoun moves out of the PP. In the present analysis this can be easily accounted for by reranking *COPY and *[_{X⁰} t]. In order to satisfy CO-SEL, A-LOC, and *PR-INC it is not allowed to make a copy, but it is allowed to excorporate by leaving a trace.

(40) Optimization of the PP in non-doubling dialects

[_{PP} mit da]	CO-SEL	A-LOC	*COPY	*PR-INC	*[_{X⁰} t]
a. [_{PP} mit da]	*!				
b. [_{PP} da ₁ [_{P'} mit t ₁]		*!			
c. [_{PP} [_P da ₁ mit] t ₁]				*!	
 d. [_{PP} da ₁ [_{P'} [_P t ₁ mit] t ₁]]					*
e. [_{PP} da ₁ [_{P'} [_P da ₁ mit] t ₁]]			*!		

In those dialects, candidate (d) with a single R-pronoun in SpecPP, wins the competition. Further extraction of the R-pronoun and hence stranding of the preposition is unproblematic since it already resides in the specifier of the phrase (this is analogous to what Gallmann 1997 and Fleischer 2002 propose). Again, as mentioned for the dialects with replication, movement of the R-pronoun or the whole PP does not interfere with PP-internal evaluation.

(41) Optimization of the PP in non-doubling dialects (P-stranding/pied-piping)

[_{PP} mit da ^[+top]]	TOP-CRIT	CO-SEL	A-LOC	*COPY	*PR-INC	*[X ⁰ t]
a. [_{PP} mit da ^[+top]]	*	*!				
b. [_{PP} da ₁ ^[+top]] [_{P'} mit t ₁]	*		*!			
c. [_{PP} [_P da ₁ ^[+top] mit] t ₁]	*				*!	
 d. [_{PP} da ₁ ^[+top]] [_{P'} [_P t ₁ mit] t ₁]]	*					*
e. [_{PP} da ₁ ^[+top]] [_{P'} [_P da ₁ mit] t ₁]]	*			*!		

Thus, as long as there is no higher ranked constraint against preposition stranding that might be violated by extraction of the R-pronoun, splitting the pronominal adverb is possible in those dialects.

4. Typological predictions

A central aspect of Optimality Theory is that all natural languages can be described by different rankings of a set of universal constraints. Hence, an OT analysis always entails a prediction about possible languages that come about by a reranking of the proposed constraints. In our case, there are five constraint and therefore $5! = 120$ different rankings which give rise to a factorial typology of five different surface patterns (dialects) represented by the five candidates in (40) (calculated in OTWorkplace_X_66, Prince et al. 2014). Each dialect is the common result of 24 different rankings. However, one of these predicted dialects does not seem to exist: An R-pronoun following its preposition as in candidate (a) is ungrammatical in any dialect of German. Since this candidate is ruled out by CO-SEL, we are forced to assume that this constraint is undominated. Of the remaining four dialect types, those represented by candidates (b) and (d) are not easily distinguishable on the surface. Both show no replication of the R-pronoun and both allow for splitting of the pronominal adverb and thus stranding of the preposition. The difference between them is that movement of the R-pronoun into the specifier proceeds via incorporation into P followed by excorporation in the dialect represented by candidate (d), while there is direct antilocal Comp-to-Spec movement in the dialect illustrated by candidate (b). In any case, those patterns are instantiated

by many northern dialects that show pronominal adverb splitting. The dialect type represented by candidate (c) could be manifested by Standard German that is usually claimed to not allow split pronominal adverbs. In this type, the R-pronoun incorporates into the preposition forming a complex P-head with no possibility of excorporating it again. Hence, it is not accessible for separate movement in syntax anymore. However, in this position, *da* should also not be able to refer in Standard German, contrary to fact. Therefore, dialect type C seems not to be instantiated by an existing dialect of German. As a further consequence, there is now apparently no candidate representing so-called Standard German, where allegedly neither R-pronoun doubling nor pronominal adverb splitting is possible. However, the status of Standard German is somewhat unclear to us. Usually, the German spoken in the area of Hannover in Lower Saxony is regarded as standard. Splitting of a pronominal adverb, nonetheless seems to be available to speakers from that region, albeit to a lesser degree. We thus conclude that the ban on split pronominal adverbs in Standard German is prescriptive in nature rather than a *bona fide* grammatical constraint. What is termed Standard German is therefore well represented by candidate (b) or candidate (d). The last dialect type which is exemplified by candidate (e) is, of course, instantiated by all those dialects that show doubling of the R-pronoun. Crucially, the analysis predicts that whenever there is doubling in a dialect there also is the possibility of extracting one copy of the R-pronoun from the PP. A prediction that is borne out to our knowledge.

5. Conclusions

While the exceptional extractability of German R-pronouns out of PPs, which usually constitute islands, has hitherto received a lot of attention, an equally interesting fact, replication of R-pronouns in some dialects has, to the extent it has been noticed at all, been largely neglected in the theoretical literature. The few analyses that there are either remain rather descriptive or provide only superficial representational analyses of the structure of the doubling construction. In this paper, we presented an analysis in the framework of Optimality Theory that explains the different distribution of R-pronouns and NP pronouns with regard to their movement properties as a consequence of their status as a repair, the difference between dialects as a consequence of different constraint rankings, and the occurrence of an apparently redundant

replication as a consequence of an interaction of constraints that force the R-pronoun to move to the specifier via incorporation leading to the creation of a copy. Under this analysis, the replication of an R-pronoun emerges not as a quirk of grammar, but as an expected result of expected rankings of universal constraints.

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