On the Syntax and Semantics of (Relative) Pronouns and Determiners

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Abstract. This paper addresses two related problems. The major empirical problem concerns the difference between two pronominal forms found in German: personal pronouns and so-called d-pronouns, which are also used as relative pronouns. The major theoretical question concerns the nature of relative pronouns in general. I will argue that d-pronouns are definite determiners, i.e., full Determiner Phrases (DPs) containing an empty NP whereas personal pronouns are merely the spell out of phi features (AgrD) not containing an NP-projection. This will allow us to account for the distributional differences between the two forms. In addition, I will argue for a restriction on Operator-variable chains that will derive the fact that only d-words but not personal pronouns can be used as relative pronouns in a language that makes use of the A'-movement strategy for relativization. It will also follow that relativization without A'-movement is possible with either a personal pronoun or a gap occupying the relativized position.

1. Introduction

The problem addressed in this paper\(^1\) can be divided into two parts. The first part is mainly an empirical problem, concerning the distinction between two pronominal forms in German. This problem is embedded in a larger theoretical problem: what is the nature of relative pronouns?

1.1. D-pronouns vs. personal pronouns

The empirical problem I will address in this paper is the difference between two types of pronominal forms. German has two lexical items that can be used as pronouns, namely the personal pronouns (er, sie, es) and the so-called d-pronouns (der, die, das):

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\(^1\) Much of the material discussed in this paper was presented on various occasions. I would like to thank the audience at colloquia at the University of Southern California, the University of California at Los Angeles, the University of British Columbia, and the Eötvös Loránd University (Budapest) for fruitful comments. Special thanks are due to E. Anagnostopoulou, M. Brody, G. Burgger, S. Burton, H. Koopman, M. Prinzhorn, D. Sportiche, T. Stowell, J. R. Vergnaud, M. L. Zubizarreta, and the four anonymous reviewers. All remaining errors are of course my own. Research on this paper was in part sponsored by the FWF, Erwin Schrödinger Auslandsstipendium #301336-SPR.
1.2. What is a relative pronoun?

It is a widely recognized fact about natural languages that they can have relative pronouns. This seems to be a purely descriptive observation. However, as it stands it is theoretically not as innocent as it may seem. First, it presupposes that elements that are used as relative pronouns are in fact pronouns. Secondly, it presupposes that natural languages can have lexical items that
are solely used in a particular construction, namely in a relative clause. If one accepts these presuppositions nothing has to be said about the syntax and semantics of relative pronouns: we could simply posit a lexical feature [+relative pronoun]. Such a lexical entry however is inherently problematic for obvious reason. It has been and is the goal of generative grammarians to get rid of construction-specific statements. This means that we want to get rid not only of construction-specific rules but also of construction-specific lexical entries.

Even though a lexical feature [+relative pronoun] has never been explicitly proposed in the generative literature (presumably for the reason just mentioned) nearly everybody working in this area makes reference to ‘relative pronouns’. The question as to what constitutes a possible relative pronoun has never been addressed. Without an answer to this question however, reference to relative pronouns implies that elements that are used as such come with the lexical feature [+relative pronoun].

One of the goals of this paper is to provide at least a partial answer to this question and by doing so make such a lexical feature obsolete. Before addressing this question in more detail I will present some empirical arguments against a lexical feature [+relative pronoun], showing that the goal of getting rid of construction-specific statements is not only theoretically desirable but also empirically supported.

1.3. Empirical arguments against a lexical feature [+relative pronoun]

Denying the existence of a lexical element that is specifically marked as relative pronoun makes two obvious predictions: First, we expect that we do not have just one single lexical item used as a relative pronoun; rather language internally (and cross-linguistically) we expect more than one possible relative pronoun. Secondly, we also expect that what is used as a relative pronoun (in a given language) can also be used differently. In other words, we expect a many-to-many correspondence between the form and use of lexical items. Judging from Smits (1989) this prediction is borne out in a variety of languages:

“Barring a few exceptions, the pronouns that are used as relativizers also fulfill some other function in the language in question, like interrogative pronoun or demonstrative pronoun.” (p. 60) Even a brief look at German relative pronouns suffices to confirm both of the above predictions.

First, we find different forms of relative pronouns, depending on the nature of the relative clause. Roughly, we observe that in headed relative clauses the d-pronoun is used (6). In headless relative clauses the relative pronoun appears as a wh-word, as shown in (7):
The second prediction, namely that elements used as relative pronouns can also be used differently, is also confirmed by the German facts. Since relative pronouns are pronominal it is to be expected that they can also be used as regular pronouns. In (1) we have already seen that this is the case.

Moreover, given the assumption that pronominals are instances of the (nominal) functional category D, we expect that these lexical items can be used as determiners. This is indeed what we find in German:

(8) Maria hat den Mann beleidigt.
    Mary has the man insulted.
    Mary has insulted the man.

Thus, we are dealing with a many-to-many correspondence between form and use of lexical elements: The $d$-word is used as the definite determiner, a pronoun, and the relative pronoun. If we were to posit a lexical entry [+relative pronoun] this situation would be a mere coincidence. However, as we have seen above, this situation is not really surprising at all. The null hypothesis is of course that in all its uses, the $d$-word is an instance of the same lexical entry (rather than positing three homophonous lexical entries). With this in mind we can tentatively draw the following (theoretically desirable) conclusion:

(9) a. There is no lexical feature [+relative pronoun].
    b. German uses the definite determiner as its relative pronoun.

Throughout this paper I will argue for the validity of this conclusion, which corresponds in fact to the descriptive observation of traditional grammarians: “In Old High German and Middle High German the simple demonstrative (= definite determiner) der, diu, daz is used as the relative pronoun. It receives its relative character solely through its position in the clause . . .” (de Boor and Wisniewski 1984, p. 100; my translation).
1.4. **Definite determiners as (relative) pronouns**

The assumptions in (9) immediately lead us back to our original question: what makes a lexical item a possible relative pronoun? We have rejected a lexical specification [+relative pronoun]. This means that we have to know the necessary and sufficient conditions that determine whether a given lexical element can be used as a relative pronoun. Ideally, the choice of a particular lexical element should follow from the constraints the construction referred to as relative clause impose on the element referred to as relative pronoun.\(^2\)

In what follows I will present answers to the following questions:

1. Why can personal pronouns not be used as relative pronouns?
2. Why does English not allow for the definite determiner to be used as a relative pronoun?\(^3\)

Let me briefly introduce the essence of the proposal that I will argue for in this paper. The difference between personal pronouns and \(d\)-words that will account for the first problem lies in their internal syntax. I will assume that \(d\)-words (as well as other determiners) can be decomposed into a bound (determiner) morpheme and agreement morphemes. Each morpheme hosts its own functional projection in the syntactic structure (\(D^0\) and \(AgrD^0\), respectively). Personal pronouns are merely the spell-out of phi-features, thus instantiating the category \(AgrD\) (rather than \(D\)). I will argue that an NP position is licensed iff there is a \(D^0\). This proposal will be empirically and theoretically motivated in section 2. In addition, I will argue that only strong \(AgrD\) can license an NP to be empty. This will provide us with the answer to question 2: \(AgrD\) in English is not strong enough to license an empty NP, and therefore the definite determiner cannot be used as a relative pronoun (section 2.4).

The crucial difference between personal pronouns and \(d\)-words is argued to be the presence vs. absence of an (empty) NP position. This will allow us to account for most of the restrictions on \(d\)-words discussed in section 1.1. Furthermore, I will argue that the presence of an (empty) NP position has an impact on the internal semantics of these elements, which ultimately will provide us with a full answer to question 1. As argued in Longobardi (1994), the noun provides a range for the determiner (which acts as an operator).

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\(^2\) A related question is obviously whether we can get rid of the notion ‘relative clause’ as a primitive in the theory. Ideally, the notion of ‘relative clause’ should be an abbreviation for the output of the interaction of various principles and parameters. This question is however beyond the scope of this paper. It should be kept in mind that even if it turns out to be impossible to give a non-construction-specific definition of relative clauses, the goal of getting rid of ‘relative pronouns’ is still valid since it would reduce the number of construction-specific statements needed.

\(^3\) An equally important question concerns of course the difference between \(d\)-words and \(wh\)-words used as relative pronouns (cf. examples (6) and (7)). For reasons of space this question cannot be addressed in this paper.
The presence vs. absence of an NP position providing a range is argued to be crucial for the external distribution of $d$-words vs. personal pronouns, respectively. In section 3, I will argue that any operator variable chain needs to be provided with one and only one range (which is provided by an NP). This assumption, which can be viewed as a particular instance of the Bijection Principle (Koopman and Sportiche 1982) will be shown to be independently motivated. There I will also discuss several strategies of relativization as well as (clitic) Left Dislocation in a variety of different languages, which will follow from this proposal.

2. The syntactic difference between $d$-words and pronouns

In this section, I will argue for a fundamental syntactic difference between $d$-words and personal pronouns, which will constitute the core of the answer to the questions posed above. The essence of the proposal is as follows: determiners can be decomposed into a bound morpheme and inflectional endings. Both morphemes host their own functional projections within the syntactic structure. Under this analysis $d$-words are full DPs containing an empty NP. I will furthermore argue that personal pronouns are the mere spell out of phi-features, i.e., an instantiation of AgrD, rather than an instantiation of D. The fact that only $d$-words contain an NP position will be argued to follow from the presence of a DP projection. In this section I will justify these claims on empirical and theoretical grounds.

2.1. Decomposing the (definite) determiner

In example (1) repeated below for convenience, we observe that both the $d$-word and the personal pronoun can be used ‘pronominally’:

(1) Maria hat ihn/ den gesehen.
Mary has him/ d-word seen.
Mary has seen him.

The null hypothesis concerning $d$-words is that they are in fact instances of the definite determiner even if they are used pronominally. Under standard assumptions personal pronouns are instantiations of (intransitive) determiners (see for example Postal 1969; Abney 1987). It is not obvious how personal pronouns and $d$-words could be distinguished structurally, given that they both are of category D under this analysis. I will follow standard assumptions in assuming that personal pronouns do not contain an NP position. However, I do not follow the standard assumption that pronouns are instances of intransitive determiners. Rather, I will argue that personal pronouns are the mere spell
out of phi-features, instantiating the functional category AgrD. One of the major empirical arguments for this view has to do with the syntactic structure of determiners that I will argue for in this paper. The (minimal) structure I will assume is given below:

(10) a. The structure of DPs: [DP d-[AgrD er [NP Mann/Ø]]]
   b. The structure of personal pronouns: [AgrDer]

Following several authors (e.g., Koopman 1993; Olsen 1991a; Tappe 1990), I assume that the determiner can be decomposed into a bound morpheme (d- for the definite determiner) which occupies D^0. This determiner morpheme takes as its complement a functional projection, which hosts agreement endings (AgrDP).

This assumption is supported by the fact that all the determiners show up with the same agreement endings as shown below:

(11) a. d-er, d-es, d-em, d-en  the
    b. ein-er, ein-es, ein-em, ein-en  a
    c. dies-er, dies-es, dies-em, dies-en  this
    d. jen-er, jen-es, jen-em, jen-en  that
    e. sein-er, sein-es, sein-em, sein-en  his

Furthermore, AgrD^0 takes an NP complement (just in case D^0 is present, see section 2.3). As mentioned earlier, personal pronouns are analyzed as the mere spell out of phi-features, i.e., they are an instantiation of category AgrD^0. This view is supported by the morphological paradigms of determiners and personal pronouns, respectively. Given that personal pronouns are instantiations of agreement endings, which are also present within determiners, we predict the following pattern. If we subtract the bound morpheme d- from the definite determiner paradigm, we expect to be left with the personal pronoun paradigm. In what follows I will show that this is indeed the case.

The validity of the decomposition proposed in (10) can most easily be observed with singular masculine and neuter determiners in the nominative, dative, and accusative case, as shown in the table below.

<table>
<thead>
<tr>
<th></th>
<th>Definite</th>
<th>Determiners</th>
<th>Personal</th>
<th>Pronouns</th>
</tr>
</thead>
<tbody>
<tr>
<td>sg.</td>
<td>m.</td>
<td>n.</td>
<td>m.</td>
<td>n.</td>
</tr>
<tr>
<td>NOM</td>
<td>d-er</td>
<td>d-as</td>
<td>er</td>
<td>es</td>
</tr>
<tr>
<td>DAT</td>
<td>d-em</td>
<td>d-em</td>
<td>ihm</td>
<td>ihm</td>
</tr>
<tr>
<td>ACC</td>
<td>d-en</td>
<td>d-as</td>
<td>ihn</td>
<td>es</td>
</tr>
</tbody>
</table>
Subtracting the definite determiner bound morpheme \( d- \) leaves agreement endings that are of the same form as the personal pronouns (abstracting away from spelling differences). The rest of the paradigm is less transparent than the proposed decomposition would lead us to expect. It is however still legitimate to pursue the present analysis. It is not unexpected that frequently used words show a high degree of idiosyncrasy (up to suppletion). However, the apparent idiosyncrasies are quite systematic. The present analysis allows us to understand some of the apparently unpredictable forms. In addition, diachronic considerations support the present analysis. Let me briefly go through the missing parts of the paradigm.

The feminine singular and the plural of all genders in nominative and accusative are identical in form.

<table>
<thead>
<tr>
<th>sg. (f.); pl. (m. n. f.)</th>
<th>Definite determiner</th>
<th>Personal pronoun</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOM</td>
<td>die</td>
<td>sie</td>
</tr>
<tr>
<td>ACC</td>
<td>die</td>
<td>sie</td>
</tr>
</tbody>
</table>

It is obvious from the table above that subtracting \( d- \) from the definite determiner does not simply leave us with the corresponding personal pronoun. Although the determiner contains part of the personal pronoun (-ie), the personal pronoun comes with an unexpected s-. However, diachronic considerations still speak in favor of the present analysis.

The present form of the feminine determiner (\( \text{die} \)) is rather new, compared to the other forms. According to de Boor and Wisniewski (1984), it first appears in Old High German. The corresponding Indo-European form used to be \(*sia\), which in turn became \(*sio\) in Germanic and \(*siu\) in West Germanic. The feminine determiner and personal pronoun were homophones. \( d- \) as the initial consonant for the feminine determiner is a rather late innovation. Under the current analysis this means that originally \( s- \) was used as the feminine determiner (bound) morpheme (whereas \( d- \) was used as the masculine and neuter determiner morpheme).

Synchronically, we can tentatively analyze the unexpected \( s- \) as follows. Assume \( s- \) occupies an additional functional projection above AgrDP but below DP. One possible candidate for such a functional projection would be Cardinaletti and Starke’s (1994) \( \Sigma_N P \), which hosts support morphemes in their analysis. That is, we could assume that the feminine and plural agreement ending is too weak to appear on its own; it has to be attached to an appropriate morpheme. If the determiner morpheme (\( d- \)) is not present, an additional support morpheme is inserted into an additional functional projection. Thus, in the process of the loss of \( s- \) as a determiner morpheme, it was reanalyzed as a support morpheme.
The second problematic set of forms concerns the genitive paradigm. At first sight we seem to be confronted with a high degree of idiosyncrasy. However, it turns out that the superficial idiosyncrasy can be reduced to one single property of the genitive paradigm. Consider the following genitive nominals (the verb *erbarmen* ‘arouse pity’ selects genitive case on its internal argument):

(12) Maria erbarmte sich **des** Hundes/ seiner/ dessen.  
    Mary took-pity REFL the\_gen dog\_gen/ his\_gen/ d-word\_gen.  
    Mary took pity on the dog/him.

The strikingly different forms of the definite determiner, the personal pronoun, and the *d*-word, respectively, cast some doubt on the possibility of decomposing the definite determiner. A comparison of the predicted forms and the actual forms of the genitive paradigm is given in the following table:

<table>
<thead>
<tr>
<th></th>
<th>Predicted form</th>
<th>Actual form</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Definite</em> m.</td>
<td>d-es</td>
<td>d-es</td>
</tr>
<tr>
<td></td>
<td>f.</td>
<td>d-er</td>
</tr>
<tr>
<td></td>
<td>n.</td>
<td>d-es</td>
</tr>
<tr>
<td><em>d-word</em> m.</td>
<td>d-es</td>
<td>d-essen</td>
</tr>
<tr>
<td></td>
<td>f.</td>
<td>d-er</td>
</tr>
<tr>
<td></td>
<td>n.</td>
<td>d-es</td>
</tr>
<tr>
<td><em>Personal</em> m.</td>
<td>es</td>
<td>seiner</td>
</tr>
<tr>
<td><em>Pronoun</em> f.</td>
<td>er</td>
<td>ihrer</td>
</tr>
<tr>
<td></td>
<td>n.</td>
<td>es</td>
</tr>
</tbody>
</table>

It is of considerable significance that the predicted forms as given above are in fact the forms we find in Middle High German (MHG). These forms can still be observed in the following (archaic) New High German (NHG) examples:

(13) Ich bin es müde.  
    I am it tired.  
    I am tired of it. H. Paul: 223

    Whose bread I eat, d-word\_gen song I sing.  
    I sing the song of whoever’s bread I eat.

b. Wes des Herz voll ist, des geht der Mund über.  
    Whose d-word\_gen heart full is d-word\_gen goes the mouth over.  
    He, whose heart is full, he talks a lot. H. Paul: 227
According to H. Paul, in MHG the genitive personal pronoun ës is replaced by the originally reflexive pronoun sîn, which is also used as the possessive pronoun. Similarly, dessen starts to replace des in early NHG. It seems plausible that the two changes within the genitive paradigm are the result of one single property. In purely descriptive terms we can say that the genitive agreement ending is somehow defective. This defectiveness has the following effects:

(15) a. AgrD [+genitive] cannot be spelled out by itself
    b. AgrD [+genitive] cannot license an empty NP

This property of the genitive agreement ending would ultimately result in the respective gaps in the paradigm of personal pronouns and d-words. These gaps were however accommodated by means of other strategies, which are different for the d-word and the personal pronoun. Let me start with the former.

Due to its defectiveness, AgrD does not serve as an appropriate licenser for empty NPs. Thus, for the ‘pronominal’ use of the definite determiner (i.e., the d-words), the system needs to find an appropriate licenser for the empty NP. It is remarkable that the additional ending -en that we find on dess-en is the same as the genitive agreement ending found on adjectives:

(16) a. des groß-en Mannes
    the\textsubscript{gen.m} big\textsubscript{gen} man\textsubscript{gen}
    b. der klein-en Frau
    the\textsubscript{gen.f} small\textsubscript{gen} woman\textsubscript{gen}
    c. des alt-en Hauses
    the\textsubscript{gen.n} old\textsubscript{gen} house\textsubscript{gen}

We can tentatively conclude that in order to license an empty NP an additional agreement ending has to be inserted. Rather than introducing a new agreement ending, the language chooses an existing one, namely the adjectival agreement ending. That the adjectival ending is a sufficient licenser for empty NPs is supported by the following examples:

(17) a. des groß-en Ø
    the\textsubscript{gen.m} big\textsubscript{gen}
    b. der klein-en Ø
    the\textsubscript{gen.f} small\textsubscript{gen}
In (17) we do not find an overt NP. The genitive determiner appears in its regular form, without an additional agreement ending. Thus we can conclude that the agreement ending on the adjective is sufficient to license the empty NP (cf. also section 2.4).

To summarize, the defectiveness of the genitive agreement paradigm results in its inability to license an empty NP. Rather an additional agreement ending (the adjectival ending) has to be used. This has the effect that d-words appear in different forms depending on whether they are followed by an overt NP (or an agreeing adjective) or by an empty NP (without an adjective), respectively. In the former case it surfaces as des whereas in the latter case it surfaces as dessen.

Let us now turn to genitive personal pronouns. Due to its defectiveness, AgrD cannot be spelled out by itself. To fill the potential gap in the paradigm the system has chosen an appropriate determiner, which the genitive agreement ending can attach to, namely the possessive determiner. This can be observed in the relevant paradigms, which are summarized in the table below:

<table>
<thead>
<tr>
<th>GEN</th>
<th>Poss. determiner</th>
<th>Def. determiner</th>
<th>Pronoun</th>
<th>D-word</th>
</tr>
</thead>
<tbody>
<tr>
<td>m. sg.</td>
<td>sein-es Bruder-s ihr-es Bruders</td>
<td>d-es Mann-es</td>
<td>sein-er</td>
<td>d-ess-en</td>
</tr>
<tr>
<td>f. sg.</td>
<td>sein-er Schwester ihr-er Schwester</td>
<td>d-er Frau</td>
<td>ihr-er</td>
<td>d-er-er</td>
</tr>
<tr>
<td>pl.</td>
<td>ihr-er Brüder</td>
<td>d-er Männer</td>
<td>ihr-er d-er-er</td>
<td></td>
</tr>
</tbody>
</table>

It does not come as a surprise that the possessive determiner is chosen to substitute the gap in the genitive pronominal paradigm. First, it has ‘pronominal’ features\(^4\) making it an appropriate candidate for a missing pronoun. Second, cross-linguistically there is an inherent affinity between possessive and genitive case, which makes the possessive determiner an appropriate substitute for the genitive pronoun.

A few more remarks on the genitive paradigm are in order. First, compare the possessive determiner with the definite determiner in the table above. The

\(^4\) The term ‘pronominal’ here is used pretheoretically, given that, under the present analysis, only instantiations of AgrD are ‘true’ pronouns.
decomposition proposed is straightforward: the determiner (bound) morphemes are *d-* and *seins/-ihr-* respectively. AgrD attaches to these morphemes. Notice that the present analysis forces us to assume that the possessive ‘pronoun’ is an instantiation of D⁰ rather than AgrD because (as indicated above) it can license an NP position. Within a DP, which receives genitive case, the determiner agrees with the NP in number, gender, and case. The agreement endings are the same as on the definite determiner.

Now consider the genitive pronouns. The present analysis predicts that the genitive ‘pronoun’ is a full DP (with an empty NP licensed by the possessive agreement ending) rather than the mere spell-out of phi-features. This is predicted because we find the possessive determiner (an instantiation of D⁰ rather than AgrD). However, the genitive pronoun is invariantly suffixed by *-er*, which corresponds to the agreement ending we find in case the head noun is feminine.

I would like to suggest that this is exactly how genitive ‘pronouns’ should be analyzed. Rather than instantiating AgrD (as other personal pronouns do) the genitive pronoun is in fact in instantiation of D⁰. Consequently, there is an empty NP position, whose grammatical gender is indeed feminine:

(18) [DP sein [AgrD er [NP Ø/Schwester]]]

We have to assume that in case the NP is empty, it receives a default interpretation, which we could assume to be Person ‘person’, which happens to be feminine. Thus the agreement ending is also feminine. This analysis predicts a mismatch between the possible forms and a preference for their actual use.⁵ If the discourse referent is neuter, the *d*-word is clearly preferred over the ‘pronominal’ form:

(19) Ich war mir **dessen/ ?*seines** nicht bewußt.
   I was REFL d-word_{gen.n.}/ its_{gen.n.} not aware.
   I was not aware of that/it.

This preference follows from the assumption that *seines* here is used as a possessive determiner. The neuter possessive determiner is homophonous with its masculine counterpart (*sein*). However, in actual use *sein* seems to be associated with a [+animate] interpretation. This also accounts for the oddness of the following example:

(20) Das neue Haus ist wunderschön. **Das/??Sein** Dach ist aus
   The new house is beautiful. The/its roof is made of
   Ziegeln.
   bricks.

⁵ This mismatch or ‘gap in the paradigm’ was pointed out by an anonymous reviewer.
The oddness of the pronominal form *seines* in (19) reduces to whatever explains the oddness of the use of the possessive determiner in (20).

A last exception to the proposed decomposition is found in the forms for the dative plural, as shown below:

<table>
<thead>
<tr>
<th>Personal pronoun</th>
<th>Def. determiner</th>
<th>d-word</th>
</tr>
</thead>
</table>

There is an unexpected ending *-en* that appears both on the personal pronoun and on the d-word. Again, this ending is a rather later innovation. According to H. Paul it starts appearing on the pronoun in the 13th century.

Synchronically, we can analyze this phenomenon as follows. Notice that the ending on the d-word and the personal pronoun is the same as the plural ending on an overt noun. We can therefore assume an even more fine-grained analysis. Let us assume that AgrD can be split into NumP and PersonP as shown below:

\[(21) \ [\text{DP} [\text{PersP} [\text{NumP} [\text{NP}]]]]\]

If there is an overt N, we can assume that it undergoes head movement to Num\(^0\) and the plural ending *-en* cliticizes onto the noun. If no such N is present, then *-en* cliticizes onto Pers\(^0\):

\[(22) \ a. \ [\text{DP} d [\text{PersP} en [\text{NumP} Frau-en [\text{NP} t_i]]] \\
    b. \ [\text{DP} d [\text{PersP} en [\text{NumP en [NP Ø]]] \\
    c. \ [\text{PersP ihn [NumP en]}]

Since this decomposition of the AgrD complex into PersP and NumP is not of any further relevance, I will continue to refer to AgrD throughout this paper.

Let me briefly summarize the major result of this section. I have argued that determiners can be decomposed into a bound morpheme that occupies D\(^0\) and an agreement ending which occupies AgrD\(^0\). In addition, we have seen that there is strong evidence that personal pronouns are the same as the agreement endings on determiners, suggesting that they are instantiations of the category AgrD\(^0\) rather than intransitive determiners as standardly assumed. Various apparent idiosyncrasies in the respective paradigms have been discussed. It turns out that the present analysis (as well as diachronic considerations) allows us to understand these idiosyncrasies. I take this to be further motivation for the analysis presented here. In the next section I will present some cross-linguistic evidence.
2.2. Cross-linguistic evidence

The assumption that there is a categorial difference between personal pronouns and determiners is supported by a survey of the determiner and pronominal systems of an unrelated language, namely Hebrew.

In Hebrew the 3rd person personal pronoun can occur with the definite determiner (ha). The output is a remote demonstrative. If an impersonal pronoun is combined with a definite determiner, the result is a proximate demonstrative (all forms are taken from Ritter 1995):

<table>
<thead>
<tr>
<th>3rd person</th>
<th>m. sg.</th>
<th>f. sg.</th>
<th>m. pl.</th>
<th>f. pl.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Definite determiner</td>
<td>ha</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personal pronoun</td>
<td>hu</td>
<td>hi</td>
<td>hem</td>
<td>hen</td>
</tr>
<tr>
<td>Proximate demonstrative</td>
<td>ha-hu</td>
<td>ha-hu</td>
<td>ha-hem</td>
<td>ha-hen</td>
</tr>
<tr>
<td>Impersonal pronoun</td>
<td>ze</td>
<td>zot</td>
<td>ele</td>
<td></td>
</tr>
<tr>
<td>Remote demonstrative</td>
<td>ha-ze</td>
<td>ha-zot</td>
<td>ha-ele</td>
<td></td>
</tr>
</tbody>
</table>

These facts are consistent with the present analysis. Hebrew differs from German in that the morpheme instantiating D⁰ is an unbound morpheme. Pronouns are supposedly instantiations of a lower projection (AgrD in the present analysis). If the two combine, the result is again a determiner, as expected under the present analysis. Notice that if personal pronouns were instances of D⁰ as well, this pattern would be unexpected. Rather we would have to posit two separate lexical entries for the definite determiner and the demonstratives. This would however miss the productive pattern that we can capture with the present analysis.

2.3. Licensing NP

In the last section I have argued that there is a categorial difference between personal pronouns and ‘pronominally’ used determiners: the former are instances of AgrD whereas the latter are instances of D (containing AgrD). I will now show that there is an even more fundamental difference between these two lexical items, which I will argue follows from the categorial difference in interaction with a licensing requirement for NPs.

Personal pronouns and pronominally used determiners have one common property: in both cases there is no overt NP. The absence of an overt NP can in principle have two causes: N might not be projected at all or, alternatively, N might be projected but not lexically filled. Regarding this question, I will follow standard assumptions concerning personal pronouns in assuming that there is no NP projection present, even though this assumption is implemented in a different way. As argued above, personal pronouns are not
intransitive determiners; rather they are instances of AgrD. I will now argue
that the lack of an NP position within personal pronouns follows from their
categorial status in interaction with the following licensing requirement:6

(23) Formal licensing for NP: NP is licensed iff there is a D0.

Given the categorial difference between personal pronouns and d-words,
which I have argued for in section 2.1–2.2, the formal licensing requirement
has the following consequence: on the one hand personal pronouns do not
contain an NP position because no D is present. d-words, on the other hand,
are definite determiners, and therefore they must contain an NP position. This
NP can be overt (as in lexical DPs) or it can be empty (as in d-words). In
particular I will argue that d-words contain an elliptical NP.

Empirically this claim is supported by the following facts. The NP position
can be overly present if and only if D0 is occupied by a determiner (bound
morpheme):

(24) a. Maria hat [den/einen/diesen] (Mann) gesehen.
    Mary has the/a/this (man) seen.
    Mary has seen the/a/this man.

b. Maria hat ihn (*Mann) gesehen.
    Mary has him (*man) seen.
    Mary has seen him.

Of course, this pattern is also captured by the standard claim that pronouns are
intransitive determiners: being intransitive it follows that they do not license
an NP. Under the present analysis this pattern follows because personal
pronouns are instances of AgrD, whereas d-words (as well as other deter-
miners) are instances of D, and only D can license an NP position. So the
standard assumption and the one proposed here make the same empirical
predictions. Now the question is whether there is a way to distinguish between
the two assumptions? In what follows I will show that the present analysis
fares better on both theoretical and empirical grounds.

One crucial piece of evidence against the assumption that personal
pronouns are intransitive determiners was presented in section 2.1. I have
shown that personal pronouns are best analyzed as instances of AgrD rather
than D, hence they cannot be instances of intransitive determiners. Given
that determiners and personal pronouns differ categorically, it is desirable to
reduce the impossibility to license an NP position to this already established

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6 In this paper I will not discuss the licensing requirements on predicative NPs, which might behave
differently in this respect.
difference rather than proposing another lexical property (i.e., intransitivity). The formal licensing requirement for NP ((23)) is intended to capture this difference.

Further motivation for the present proposal stems from theoretical considerations. It seems to be a very general property of personal pronouns in all languages that they cannot take an NP complement. In addition, I have argued above that they differ from determiners in their categorial status. They are instances of AgrD (i.e., they are the mere spell-out of phi-features). With this assumption it is possible to state their inability to license an NP as a universal principle (i.e., the formal licensing condition on NPs). This means that we do not need an additional lexical entry (i.e., intransitivity) for the forms that surface as personal pronouns. Notice that under the assumption that personal pronouns are determiners, their intransitivity would have to be stated separately for each language. Under the present analysis all we have to know is that we are dealing with nominal phi-features that instantiate the category AgrD.

Moreover, the present analysis allows us to give a simple definition of R-expressions. We can say that any DP counts as an R-expression. Note that under the standard assumption this is not possible given that pronouns are DPs as well. This means however that binding theory would have to distinguish between DPs containing an intransitive determiner and DPs containing a transitive determiner, the former being subject to condition B whereas the latter is subject to Condition C. This is radically simplified under the present analysis: DPs are subject to Condition C, and AgrDPs are subject to Condition B (cf. section 3.3).

The formal licensing requirement for NPs ((23)) raises some questions concerning the syntactic status of proper names on the one hand and of bare plurals on the other hand. According to (23) (and the definition of R-expressions proposed above) we have to assume that names are DPs that contain an NP position. This assumption is not really controversial. For example Longobardi (1994) explicitly assumes that names are inserted as nouns (N) that (can) undergo head-movement to D. This is empirically supported by the fact that some languages (for example German) allow determiners to precede a proper name.

Notice that the licensing requirement in (23) contains a biconditional requirement. Whenever there is a determiner, there must be an NP (even if it is empty, as in the case of d-words), and whenever there is an NP, there must be a DP projected as well. This means that we have to assume that bare plurals (and mass nouns) contain a DP with an empty determiner. Again this analysis is independently motivated for Italian in Longobardi (1994), who assumes that bare plurals and mass nouns are NPs which are complements
of empty determiners, one of the major arguments being that arguments have to be DPs. Given that both bare plurals and mass nouns can be arguments in German as well, we can simply adopt Longobardi’s analysis.

Finally, notice that one of the original motivations for treating personal pronouns as intransitive determiners was the observation that personal pronouns do not occur with determiners. The present proposal is however empirically more adequate. First, we have seen that there are languages where pronouns can be preceded (i.e., prefixed) by determiners (Hebrew). Also, we have decomposed the German determiner into a bound determiner morpheme attaching to agreement features (i.e., the personal pronouns). An empirically adequate analysis of pronouns and determiners should not miss these generalizations, which the assumption that pronouns are intransitive DPs does. Secondly, the present analysis can still account for the ill-formedness of the following DPs:

(25) *der er *die sie *das es
    the he the she the it

These examples exemplify the original observation that pronouns cannot be preceded by determiners. Under the present analysis there is however an alternative explanation available. D0 (d-) does indeed select for an AgrDP, which is however instantiated by -er, -ie, -as. In order to rule out (25), we simply have to make the plausible assumption that AgrD is not recursive.

Let me briefly summarize what we have found so far. We have established a categorial difference between personal pronouns and d-words, the former being instances of AgrDP and the latter being instances of DP (containing an AgrDP). In addition, I have argued for a formal licensing requirement for NPs which has the effect that NPs are licensed iff there is a D. The impossibility of pronouns to license an NP is reduced to a universal principle which is empirically and theoretically well motivated. This means that the categorial difference between d-words and personal pronouns has another fundamental effect: d-words contain an empty NP whereas personal pronouns do not. In the next section, I will argue that in addition to the formal licensing requirement on NPs there is an additional licensing requirement for empty NPs.

2.4. Licensing an empty NP

Empty NPs are subject to two licensing requirements, similar to other empty categories. The first licensing requirement allows us to identify an NP position in general (no matter whether it is empty or overt). This is the formal licensing requirement on NPs discussed in the last section. However, in order
to identify the content of an empty NP, there is a further licensing require-
ment, which we can view as the identificational licensing requirement on
empty NPs.7

(26) Identificational licensing for empty NPs: Strong AgrD licenses an empty
NP

Here I will assume that the empty element we find in the cases I will discuss
is an elliptical NP.8

In the literature on German DPs it is generally assumed that empty NPs are
licensed by adjectival agreement as in (27) (cf. among others Kester 1995):

(27) Ich habe den der m
I have seen the big one.

The fact that determiners can be used pronominally, however, suggests that
adjectival agreement is not the only possible licenser for empty NPs. In the
cases I am interested in here we do not find an adjective. Determiners can be
used 'pronominally', suggesting that the agreement ending on a determiner
(i.e., AgrD) is a possible licenser for an empty NP as well.9

This fact is important in light of the main question of this paper, namely
the question concerning the nature of relative pronouns. What we have seen
so far implies the following correlation. In order for a determiner to be used
pronominally it must license an empty NP, which is only the case if it is
associated with strong agreement. As a result, the definite determiner can be

7 I am grateful to Elena Anagnostopoulou for helpful comments on this matter.
8 Note that there is another possibility. This is to assume that the empty NP position is occupied by pro.
For the present purpose the decision between the two possibilities is not crucial. Notice that both, ellipsis
and empty pronouns, are subject to similar licensing constraints: i.e., formal and identificational licensing.
9 An anonymous reviewer points out the following data, which suggest that AgrD on the determiner is
not a sufficient licenser.

(i) Sie hat sich das lilane/ *lila Ø gekauft.
   She has brought herself a purple one. (e.g. dress)
What (i) shows is that agreement on the determiner suffices to license an empty NP only if no adjective
intervenes. If there is an adjective, the agreement on the adjective must do the job. In most cases of DPs
containing an adjective this is not immediately obvious since most adjectives are not licensed without
agreement. However, there is a small set of adjectives that need not be inflected (as shown in (i)). If one
of these adjectives is used, then it becomes clear that the agreement ending of the determiner does not
suffice anymore. This means that agreement licenses an empty NP under a strict locality requirement. For
the present purpose it is sufficient to note that there is such a locality requirement. The exact nature of this
requirement cannot be determined here since we would have to discuss the position of adjectives as well
as the exact nature of adjectival agreement in German, a rather complex matter, which goes beyond the
scope of this paper. (See among others: Bhattacharya 1991; Gallmann 1996; Haider 1988; Kester 1995; Mallen
used as a relative pronoun only if it is associated with strong agreement. A brief look at Dutch and a southern dialect of German confirms this pattern.

Dutch has two determiners, a weak and a strong version: *de, het*, as opposed to *die, dat*. The weak one can be analyzed as lacking determiner agreement. Therefore it cannot license empty NPs. The strong form, however, does have agreement endings, and it can license empty NPs. As expected, only the latter can be used as a relative pronoun in Dutch.

In southern dialects of German, there are two different determiners: a full and a reduced form:

(28) full (strong) forms:

<table>
<thead>
<tr>
<th>M</th>
<th>F</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>de</td>
<td>die</td>
<td>des</td>
</tr>
<tr>
<td>Mo</td>
<td>Frau</td>
<td>Kind</td>
</tr>
<tr>
<td>them.</td>
<td>the(_f).</td>
<td>the(_n).</td>
</tr>
</tbody>
</table>

(29) reduced (weak) forms:

<table>
<thead>
<tr>
<th>M</th>
<th>F</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>da</td>
<td>d’</td>
<td>s’</td>
</tr>
<tr>
<td>Mo</td>
<td>Frau</td>
<td>Kind</td>
</tr>
<tr>
<td>them.</td>
<td>the(_f).</td>
<td>the(_n).</td>
</tr>
</tbody>
</table>

Crucially, the reduced form can never be used pronominally, and consequently, the relative pronouns always correspond to the strong forms in (28), as shown below:

(30) a. *da Mo, dea/ s’ Bia erfundn hot the man, d-word\(_{strong}\)/ d-word\(_{weak}\) the beer invented has the man who invented the beer

b. *d’ Frau, die/ s’ Bia erfundn hot the woman, d-word\(_{strong}\)/ d-word\(_{weak}\) the beer invented has the woman who invented the beer

c. *s’ Kind, des/ s’ Bia erfundn hot the child, d-word\(_{strong}\)/ d-word\(_{weak}\) the beer invented has the child who invented the beer

With this in mind we can now answer one of the original questions, namely why English does not allow the definite determiner to be used as a relative pronoun. It is a well-known fact that German differs from English in how NP-ellipsis is licensed:

(31) a. John bought [the red car], and [the green *(one)]

b. A: John bought [the red car].
   B: Really, I thought he bought [the green *(one)].
In English, NP-ellipsis is licensed only if the ‘dummy’ noun *one* is inserted. This difference between English and German can be reduced to the presence vs. absence of nominal agreement, respectively. In English, neither adjectives nor determiners show overt agreement endings. Although in principle D suffices to formally identify it, NP cannot be empty, due to the lack of agreement. This has the result that the English definite determiner cannot be used pronominally either; it patterns with weak determiners in Dutch and the southern German dialects:

(32) a. *I saw the.
    b. *The came.

Notice that this difference between English and German immediately derives the fact that the definite determiner cannot be used as a relative pronoun in English, i.e., we have an answer to one of the problems discussed in section 1.4. The English definite determiner cannot be used as a relative pronoun since it lacks agreement, and therefore it cannot license an empty NP (i.e., it cannot be used pronominally).¹⁰

2.5. *The internal semantics of d-words and personal pronouns*

Let me briefly summarize the main findings of this section. I have argued for a formal and an identificational licensing requirement for (empty) NPs. With this analysis we have established a clear syntactic difference between *d*-words and personal pronouns. The former, being instances of D⁰, are associated with an (empty) NP position, whereas the latter, being instances of AgrD⁰ are merely the spell-out of (nominal) agreement, without an NP

¹⁰ Notice that the impossibility of the determiner to be used pronominally would still allow a definite DP containing the dummy noun *one* (i.e., the *one*) to be used as a relative pronoun, contrary to fact:

(i) *I saw the man the one Mary just married.

However, there is one crucial distinction between the *one* and the German *d*-word. The one has to denote a subset of a previously established set. It has to be used with some restrictive modification ((ii)). It cannot be co-referent with a previously established discourse referent ((iii)) nor can it be accompanied by ostension ((iv)).

(ii) Q: How do you like these flowers?
    A: Very much! Especially the red one/the one with the red blossoms/the one that has the red blossoms

(iii) Q: Have you seen Peter?
    A: *Yes, the one is sitting right here

(iv) *I want THE one

Within relative clauses the relative pronoun has to be co-referent with the head of the relative clause. Thus, whatever rules out (ii/iv) must also be responsible for the fact that the *one* cannot be used as a relative pronoun.
associated with them. The presence vs. absence of an (empty) NP position has an important consequence concerning the internal semantics of d-words and personal pronouns, respectively. According to various authors (see for example Longobardi 1994) “Determiners are semantically understood as operators binding a variable, whose range is always the extension of the natural kind referred to by the head noun.” (p. 633). This means that, as a byproduct of being associated with an NP, DPs contain a range whereas personal pronouns do not.\footnote{This assumption obviously implies that proper names are associated with a range as well. The nature of this range is not as obvious as it is with common nouns. I will follow Longobardi (1994) in assuming that names “define as a range for the variable the kind of all possible individuals named that way (or the kind of all possible stages of the relevant individual named that way).” (Longobardi p. 637). Cf. also Wiltschko (1995b).}

It will be of importance for the analysis of the external distribution of d-words vs. personal pronouns that – as a byproduct of containing an empty NP – only d-words, but not personal pronouns, contain a range.\footnote{The range provided by the head noun can obviously be modified in various ways, for example by adjectives.}

In the next section I will show how their internal analysis can derive several distributional differences between personal pronouns and d-words. In doing so, I will provide a solution to the main problems discussed in section 1.

3. The distributional difference between personal pronouns and d-words

3.1. D-words need an NP-antecedent

In addition to formal and identificational licensing, any elliptical constituent needs a linguistic antecedent. In other words, a d-word needs a full lexical DP (with an overt NP) as its antecedent. Personal pronouns differ in that they need only a (salient) discourse referent as their antecedent, i.e., they do not need a linguistic (NP) antecedent.

In most circumstances the notion of discourse referent coincides with the presence of an NP antecedent. However, there are environments where the two notions can be distinguished. The German noun Mädchen ‘girl’ denotes a female individual. However, its grammatical gender is neuter. A personal pronoun that is anaphorically related to a noun like this can be either feminine or neuter:

(33) Ein Mädchen kam zur Tür herein. Sie/ es war schön.
A girl came through the door. She was beautiful.
The fact that the co-referent pronoun an be either neuter or feminine is related to the fact that a pronoun needs a discourse antecedent only (rather than a linguistic antecedent).

Given the assumption that $d$-words are full DPs with an elliptical NP which needs a linguistic antecedent (i.e., a preceding NP), we expect that a $d$-word that is anaphorically related to the DP *ein Mädchen* can occur only in its neuter form. This is a correct prediction:

(34) Ein Mädchen, kam zur Tür herein. Das/ *die, war schön. A girl came to-the door here-in. The/ the, was beautiful.

A girl came through the door. She was beautiful.

Only the neuter form of the $d$-word is possible in a context like (34). $d$-words need an NP antecedent to license the elliptical NP. Since the NP antecedent is grammatically neuter, the $d$-word has to be neuter as well: it has to agree with the elliptical neuter NP it takes as a complement. The contrast between (33) and (34) is straightforwardly predicted by the present analysis, providing independent support.

### 3.2. Expletives

The internal syntactic (and semantic) difference between personal pronouns and $d$-words that I have argued for in section 2 can straightforwardly account for their different behavior concerning the ability to be used as an expletive. The neuter form of a personal pronoun can be used as an expletive, but the neuter form of a $d$-word cannot. In the examples below an expletive functions as the subject of a weather verb ((35)) a raising verb ((36)), and as the so-called ‘Vorfeld-es’ in SpecCP ((37)):

(35) Es/ *das regnet. It/ d-word rains.

It rains.

(36) Es/ *das scheint, daß Maria einen Mann beleidigt hat. It/ d-word seems that Mary a man insulted has.

It seems that Mary has insulted a man.

It has to be noticed that judgements here are rather delicate, which is a result of various factors. On the one hand, there is a prescriptive rule that forbids the feminine personal pronouns to be co-referent with a neuter DP. However, there mere existence of such a prescriptive rule tells us that native speakers tend to violate it. On the other hand, some speakers do not like the $d$-word in this environment at all. An anonymous reviewer points out that these cases could be analyzed as instances of V2nd relative clauses. If this were the case however, then the grammaticality of sentences like (33) would not be expected since personal pronouns can never be used as relative pronouns.
(37) \textbf{Es/ *das} kam ein Mann zur Tür herein.

\begin{itemize}
\item\textit{it/ d-word\textsubscript{sg,n}} came a\textit{ man to-the door here-in.}
\end{itemize}

There came a man through the door.

The impossibility of the \textit{d-word} to be used as an expletive is predicted by the present analysis. \textit{d-words}, unlike personal pronouns, contain an empty NP. This necessarily results in some referential impact. It is however a defining property of expletives that they do not refer. Thus, the referential impact of the empty NP contained in the \textit{d-word} is simply not compatible with the defining property of expletives.

3.3. \textit{A-binding}

There is another restriction on \textit{d-words}, which was mentioned in section 1 and which follows from the syntactic difference between \textit{d-words} and personal pronouns established in section 2.

The assumption that \textit{d-words} are full DPs (with an elliptical NP) amounts to saying that they are R-expressions. In fact I have argued that R-expressions can be defined as DPs. Thus, we expect \textit{d-words} to be subject to Condition C of the Binding Theory whereas personal pronouns are subject to Condition B. In section 1 we have already seen that this is indeed the case: \textit{d-words} have to be A-free. The relevant minimal pair is repeated here for convenience:

(38) Peter, hat geglaubt, daß \textit{er/ *der} dumm ist.

\begin{itemize}
\item Peter, has believed that \textit{he/ d-pron} stupid is.
\end{itemize}

Only personal pronouns, but not \textit{d-words}, can be A-bound. This behavior follows straightforwardly: \textit{d-words} are R-expressions, and R-expression cannot be A-bound. The difference with respect to Binding Theory is straightforwardly explained under the present analysis, which posits a crucial syntactic difference between personal pronouns and \textit{d-words}.

It should also be noted here that epithets confirm the assumption that every DP counts as an R-expression. They cannot be A-bound either:\footnote{I am grateful to an anonymous reviewer for pointing out this fact.}

(39) \textit{*Peter, hat geglaubt, daß der Idiot dumm ist.}

\begin{itemize}
\item \textit{*Peter, has believed that the idiot stupid is.}
\end{itemize}
3.4. **Bound variables**

Another crucial difference between personal pronouns and *d*-words that we have seen in section 1 concerns their behavior with respect to quantifier binding. Only personal pronouns can be bound variables. *d*-words, like other R-expressions, cannot be bound by a quantified NP:

\[(40) \text{Jeder } \text{Mann}_i \text{ glaubt, daß } \text{er,der}_i \text{ stark ist.} \]

\(\text{Every man}_i \text{ believes that he, d-word}_i \text{ is strong.}\

Notice that in the example above, the ungrammaticality of the *d*-word could be reduced to a Condition C effect. It occurs in a position that is c-commanded by the argument position of the QP.

3.4.1. **A-free bound variables**

It can be shown that the prohibition on the bound variable interpretation of *d*-words is independent of Condition C. The following example provides a first piece of evidence:

\[(41) \text{daß die Frauen}_i \text{ jeden Mann}_i \text{ küßt, die ihn}_i \text{ liebt} \]

\(\text{that the woman}_i \text{ every man}_i \text{ kisses who}_i \text{ him, d-word}_i \text{ loves}\

In (41) we find an extraposed relative clause that contains a personal pronoun or a *d*-word, which is bound by the quantified NP *jeden Mann*. The relative clause is adjoined to a position that is higher than the head of the relative clause, i.e., the argument position of the object.\(^{15}\) This means that the pronominal element is not A-bound by the QP *jeden Mann*. At LF the quantified NP undergoes quantifier raising to a position where it can take wide scope over the definite DP. In this position it can also c-command the extraposed clause and therefore the pronoun within this clause. This pronoun can be interpreted as a bound variable.

Although the *d*-word is A-free, it still cannot occur in this configuration, as shown in (41). This suggests that the fact that *d*-words cannot be interpreted as bound variables is independent of Condition C.

There is another empirical domain, which points in the same direction. It is observed in Rothstein (1995) that the pronoun *it* in (42) is ambiguous:

\[(42) \text{I regret it every time I have dinner with John.}\]

\(^{15}\) Cf. Culicover and Rochemont (1990) and Wiltschko (1995a) for the adjunction site of the extraposed relative clause.
a. For every event of having dinner with John, I regret that event.

b. On every occasion of having dinner with John, I regret a specific thing.

The paraphrase in (42a) corresponds to the bound pronoun interpretation: the pronoun is bound by the QP *every time*. The interpretation paraphrased in (42b) is that of a referentially independent pronoun. There must be some other (discourse) antecedent that determines the content of the pronoun. The same phenomenon can be observed in German:

(43) (%)Ich bedaure es jedesmal, daß ich mit Hans esse.
    I regret it every-time that I with Hans eat (ambiguous)

Above we have seen that the *d*-word cannot be interpreted as a bound variable. Therefore we expect that if the *d*-word is used instead of the personal pronoun in (43), the sentence is disambiguated. It can have only the referentially independent reading:

(44) %Ich bedaure das jedesmal, daß ich mit Hans esse.
    I regret d-word every-time that I with Hans eat (unambiguous)

This is a correct prediction: the *d*-word cannot be interpreted as a bound variable although it is A-free. Thus we have independent evidence that the restriction on the bound variable interpretation of *d*-words cannot be reduced to a Condition C violation.

It is important to note that the restriction on the bound variable interpretation equally holds for full R-expressions (i.e., DPs with an overt NP):

(45) *Jeder Mann, glaubt, daß der Mann, stark ist.
    *Every man, believes that the man, strong is.

16 As indicated by %, the use of the ‘*daß* clause’ in case of the referentially independent reading is possible only in a dialectal variant. In standard German *wenn* ‘when’ has to be used instead of *daß*.

(i) Ich bedaure es jedesmal, wenn ich mit Hans esse.
    I regret it every-time when I with John eat.

An anonymous reviewer points out that in the dialectal variant mentioned above the subordinate clause might be a relative clause dependent on *jedesmal*. If this were the case, then the apparent complementizer *daß* would actually be the relative pronoun *das*. These two elements are pronounced alike in standard German. However, in this dialect, the complementizer and the relative pronoun can easily be distinguished: the former is pronounced /das/ whereas the neuter relative pronoun is pronounced /des/. In the example above *das* is clearly an instance of the complementizer since it is pronounced /das/.
I regret the event, every-time, that I eat with Hans. 
I regret the event, every time, I eat with John.
(bound pronoun interpretation)

So far, the present analysis predicts that R-expressions and d-words pattern alike. However, the general prohibition against R-expressions being used as bound variables does not straightforwardly follow from any well-established principle. This is a very general problem, which is independent of the problem this paper addresses. In what follows, I will propose an analysis which will allow us to solve two problems at the same time: the prohibition against R-expressions being used as bound variables as well as the prohibition against personal pronouns being used as relative pronouns.

3.4.2. The range restriction on variables
At this point we are faced with the following two problems:
1. Why can R-expressions not be used as bound variables but personal pronouns can?
2. Why can personal pronouns not be used as relative pronouns but d-words can?

In what follows I will introduce and motivate a restriction on Operator-variable chains, which will address the two problems above, i.e., we will see that these seemingly unrelated problems are in fact tightly connected. The restriction which I am going to argue for is as follows:

(47) The Range Restriction on Variables. (RRV)
a. A variable cannot contain a range.
b. A variable needs a range.

Let me briefly show how the RRV solves the two problems above. Consider first the restriction in (a): A variable cannot contain a range. In the system presented so far, R-expressions are defined as DPs. DPs (including d-words), contain an NP, the head of which provides a range for the variable bound by an operator (cf. section 2.5). Therefore, R-expressions as well as d-words can never be used as bound variables. This solves the first problem.

Now consider the second restriction, (b): A variable needs a range. With this assumption we will be able to solve the second problem. Since a variable needs a range, and the variable itself cannot contain this range, it follows that the binder of the variable has to provide the range. Therefore, only R-expressions (including d-words) can A'-move and thus acquire the status of an operator binding the A'-trace, which acts as a variable. Personal pronouns do not contain an NP, and thus they cannot provide a range. Therefore they
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cannot be A’-moved, which is however essential for being used as a relative pronoun. Before I discuss the relevance of the RRV for the main problem of this paper, i.e., the nature of relative pronouns, I would like to further motivate it.

As stated in (47) the RRV consists of two restrictions, each of which solves one of the above problems. It does not really provide us with a unified account for the two problems under consideration. However, the two restrictions are related in such a way that they can be further reduced to one general restriction. The results of the RRV, as discussed above, can be achieved by the assumption that there is a one-to-one correspondence between an operator-variable-chain and a range, much in the spirit of the Bijection Principle (cf. Koopman and Sportiche 1982), which I would like to extend in the following way:

(48) **Extended Bijection Principle**

There is a bijective correspondence between an operator-variable-chain and a range. (That is, each operator must A’-bind exactly one variable, and each variable must be A’-bound by exactly one operator, and for each operator-variable-chain there must be exactly one range.)

The Extended Bijection Principle receives indirect support from the following considerations. It allows us to simplify the definition of syntactic variables in the following way. Consider the standard definition of syntactic variables:

(49) **Variable = def [NP e] in A-position and locally ’-bound. Chomsky (1981)**

According to (49), syntactic variables are by definition empty categories ([NP e]). This definition faces a number of theoretical and empirical problems. First, it does not follow from any principle that overt NPs cannot be variables. It is merely stipulated in the definition. Secondly, variables in the sense defined above are treated en par with R-expressions with respect to Condition C of the Binding Theory. Variables are assumed to be the empty counterpart of R-expressions. Thus, it is even more stipulative that overt R-expressions cannot be bound variables. A third problem which arises from (49) is that there are languages which allow for resumptive pronouns, i.e., non-empty variables (cf. section 3.5). With the Extended Bijection Principle we can get rid of this unwanted stipulation and define syntactic variables as follows:

17 The Bijection Principle is defined as follows:

There is bijective correspondence between variables and A’-positions. (That is, each operator must A’-bind exactly one variable, and each variable must be A’-bound by exactly one operator). (Koopman and Sportiche 1982)
Syntactic variables = def [XP] in A-position and locally A'-bound

A second advantage of the Extended Bijection Principle is that it allows us to define a common property between syntactic variables as defined in (50) and instances of (semantically) bound variables, as in the example below:

(51) Every man, believes that he, is intelligent.

Pronouns can be used as bound variables. Under common assumptions both A'-traces as well as bound pronouns are treated as variables, though the latter do not (necessarily) fall under the definition of syntactic variables: they are not necessarily locally A'-bound. We therefore have to define (semantically) bound variables as follows:

(52) bound variable = def [XP] in A-position and A'-bound by an Operator

Even though syntactic variables and semantic variables behave differently, the Extended Bijection Principle ranges over both. This has the result that neither of them can contain a range. Thus, at least for the Extended Bijection Principle, they group together as a natural class, which is a desired result. There is a clear intuition behind the restriction that variables cannot contain a range. It is a crucial property of variables that they do not have their own referential impact, i.e., they acquire their interpretation by virtue of the element that binds them. Thus, being inherently associated with a range is not compatible with a variable interpretation. As mentioned above, this property explains why R-expressions, including d-words, cannot be used as bound variables: they are associated with a range provided by the noun that they contain.

There is another consequence of the Extended Bijection Principle having to do with the behavior of bound variables. The second restriction in the RRV as formulated above (which follows from the Extended Bijection Principle) is explicitly or implicitly assumed in most analyses of quantification and/or operator-variable chains. It is simply another way of putting the assumption that every quantifier – variable chain needs a restriction. We can now empirically distinguish between the RRV and the Extended Bijection Principle. The latter (but not the former) predicts the following pattern. If the A'-binder which binds the variable does not contain a range, then the range must be provided by the constituent containing the variable. This is exactly the pattern

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18 Notice that in (50) we find a category-neutral definition of variables. This is necessary in order to allow for AgrDPs (i.e., resumptive pronouns) as well as traces of QPs and PPs to fall under the definition of variables.

19 Note that RRV does not immediately derive the desired result if one assumes a copy theory for movement (cf. Chomsky 1995). If a trace is simply a copy of the moved element, then it will contain a range. For the RRV to work under the copy theory, one has to make sure that the range is deleted in the copy.
we find. According to Heim (1982), indefinites are interpreted as variables bound by an operator, as in the examples below:

(53) a. There is a dog in the garden
    \[ \exists x [\text{dog}(x) \land \text{in the garden}(x)] \]

    b. A dog has four legs.
    \[ \text{Gen} x [\text{dog}(x)] [x \text{ has four legs}] \]

c. A dog always has four legs
    \[ \forall x [\text{dog}(x)][x \text{ has four legs}] \]

Obviously, indefinites contain an NP, and therefore they contain a range. This is however not a problem for the present analysis. The variable does not contain the range; rather the variable is introduced by the same constituent, which also contains the range, i.e., an indefinite introduces a variable rather than being one. In this case the range is provided by the constituent that contains the variable rather than by the binder. Notice that none of the operators in the examples above (\[ \exists \], Gen, the quantificational adverb) contains a range, as expected, given the Extended Bijection Principle. On the other hand, we expect that indefinites cannot be bound by a constituent containing a range, such as for example a quantified NP. Rather, in this case we expect the bound variable to be necessarily instantiated by a pronoun. This prediction is borne out:

(54) *Every man, believes that a/the man, is smart.

Notice that the pattern in (54) is not immediately expected under Heim's analysis. Given that indefinites can be interpreted as bound variables in (53), it is not immediately clear why (54) is ruled out. The Extended Bijection Principle derives this pattern straightforwardly, providing indirect evidence for its validity. There are two more issues that are crucial in this connection: donkey sentences and epithets.

3.4.3. Donkey sentences
Donkey sentences constitute a potential problem for the (Extended) Bijection Principle:20

(55) If a farmer owns a donkey he beats it.

In many analyses the possibility of unselective binding is crucial to explaining the apparent bound variable behavior of the pronoun above (cf. for

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20 I am grateful to an anonymous reviewer for drawing my attention to this potential problem.
example Heim 1982). One operator is assumed to bind two variables, clearly contradicting the (Extended) Bijection Principle. However, there is an alternative solution for donkey sentences available. Under this approach, donkey anaphora are ‘definite descriptions in disguise’, which are interpreted as follows (cf. Evans 1980)

(56) If a farmer owns a donkey, he beats the donkey that he owns.

Assuming the Extended Bijection Principle, we are forced to adopt the latter analysis. In this respect the behavior of \(d\)-words is again crucial. In German, either personal pronouns or \(d\)-words can be used as donkey anaphora:

(57) Wenn ein Bauer einen Esel hat, dann schlägt er ihn/\(d\)-word

If a farmer a donkey has then beats he him/\(d\)-word

If a farmer owns a donkey, then he beats it.

Since we know that \(d\)-words can never be used as bound variables, we have some indirect support for Evans’ (1980) analysis. If donkey anaphora were really bound variables, it would be a dubious coincidence that \(d\)-words can only be used as bound variables in the context of donkey sentences.

3.4.4. Epithets
There is one other problem for RRV (and consequently for the Extended Bijection Principle). Some overt R-expressions can be A'-bound, namely so-called epithets:

(58) Which assailant, did Mary escape from before the bastard, had a chance to steal her money?

In (58) the R-expression in the adjunct clause is A'-bound by the \(wh\)-word. Lasnik and Stowell (1991) argue that any kind of definite DP can occur in this configuration. Since \(d\)-words are definite DPs, we expect that they can also occur in this configuration:

(59) Welchem Dieb konnte Maria \(t_1\), entkommen bevor \(der\), ihr Geld

Which thief could Mary \(t_1\), escape before \(d\)-word, her money

stahl?

Which thief could Mary escape from before he stole her money?

It seems as though epithets can be used as bound variables, contradicting RRV. Although I do not have a solution for this problem, I would like to mention one set of data that suggests that RRV is still on the right track. In
the examples above, the fronted *wh*-phrase is D-linked. It has been argued in Pesetsky (1987) that D-linked *wh*-phrases are not quantificational. This can be interpreted as saying that D-linked *wh*-phrases do not count as operators for the definition of bound variables given in (52). Thus no operator-variable chain is created. Therefore we can assume that the *d*-word in (59) and the full R-expression in (58) are not interpreted as bound variables. The possibility of *d*-words occurring in this environment disappears in case the *wh*-word is non-D-linked:

(60) Wem, zum Teufel konnte Eva nicht widerstehen nachdem sie *ihn/ 
Who, the devil could Eve not resist after she has kissed him/ 
*den (Bastard), küßte? 
*the bastard,?

With (aggressively) non-D-linked *wh*-phrases we find a contrast between personal pronouns on the one hand and R-expressions (including *d*-words) on the other. The former are well-formed whereas the latter class is not possible in this environment. Again this indicates that *d*-words and R-expressions pattern alike. This pattern follows from the present analysis. The difference between the paradigms in (58–60) follows from the definition of variables. The *d*-words does not count as a syntactic variable since it is not locally A′-bound, nor does it count as bound (semantic) variable because it is not A′-bound by an operator: in (58) and (59) we find D-linked *wh*-phrases that do not seem to pattern with other operators.21 Therefore a definite DP can be A′-bound by these elements. However, if the A′-binder is a non-D-linked *wh*-word (i.e., a quantified NP), then only pronouns are well-formed. This follows from RRV: only NPs that do not contain a range can be variables.

Obviously, there are many more implications of the Extended Bijection Principle, but it would go beyond the scope of the present paper to go into further detail. For the present purpose it must suffice that we have provided some independent motivation for the RRV, which crucially solves the main problems addressed in this paper. First, it derives the fact that R-expressions (including *d*-words) cannot be used as bound variables whereas pronouns can. Secondly it derives the fact that only *d*-words but not personal pronouns can be used as relative pronouns, which I will address in turn.

21 Notice that the assumption that certain A′-binders do not count as operators with respect to the definition of variables is reminiscent of Lasnik and Stowell’s (1991) distinction between true and non-true operators. Non-true operators can escape WCO violations, which is also true for D-linked *wh*-words (cf. Mahajan 1991).
3.5. Relative pronouns

In section 2 it was argued that personal pronouns crucially differ from \(d\)-words in their internal syntax: \(d\)-words are full DPs containing an (empty) NP position whereas personal pronouns are the mere spell-out of phi features and do not contain an NP. Crucially, the presence of the NP has semantic impact, in that it provides a range. In the previous section, I have argued for the RRV (which was ultimately derived from a more fundamental principle: the Extended Bijection Principle). With these assumptions, we are now in the position to provide an answer to one of our questions: why can personal pronouns not be used as relative pronouns?

For semantic reasons, a relative clause needs to contain a variable: it is interpreted as a predicate entering a predication relation with the head noun.\(^{22}\) In principle there are several ways to achieve this, which I will discuss in turn. In German, as in many other languages, the variable is provided by the trace left behind by A\(^0\)-movement of the \(d\)-word. This means that in relative clauses we are dealing with an operator-variable-chain, which is subject to the Extended Bijection Principle.\(^{23}\) Therefore the variable needs to be provided with a range. Since only \(d\)-words but not personal pronouns contain an NP, which can provide a range for the variable, it follows that only \(d\)-words but not personal pronouns can be used as relative pronouns.

There is a second way to provide a variable within the relative clause: Personal pronouns can be interpreted as variables, without inducing the need for A\(^0\)-movement. If all we need in a relative clause is a possible variable, then we predict a correlation between A\(^0\)-movement and the form of the pronoun that is base-generated in the relativized position. We know independently that

\(^{22}\) An anonymous reviewer points out the following example that might constitute a problem for this assumption:

(i) Let there be an ikosahedron such that the square of the sum of the edges equals triple the surface of the sides.

If subordinate clauses introduced by such that are indeed relative clauses, this would suggest that there is a much weaker aboutness condition between the head and the relative clause, as we would expect here. Although I do not have an account for these clauses, I will assume that they are in fact of a different kind than the relative clauses investigated in this paper. Therefore they are subject to different licensing conditions. This assumption is motivated by the fact that the presence of this clause is (partly) a function of the verb in the matrix clause. Only a small number of verbs allow its occurrence. This suggests that this clause is not dependent only on the head NP but rather on the entire VP. Compare:

(ii) Let there be/ imagine an ikosahedron, such that . . .

(iii) *I saw/destroyed in ikosahedron, such that . . .

The same kind of restriction is not attested with relative clauses, which are the subject of the present analysis. Thus, I conclude that it is legitimate to set these clauses aside.

\(^{23}\) Cf. Lasnik and Stowell (1991) for independent evidence that relative clauses contain a true operator. Thus the A\(^0\)-trace falls under the definition of bound variables.
$d$-words cannot be used as variables (cf. section 3.4). In order to provide a variable in the relative clause, and the $d$-word undergoes $A'$-movement. However, if the nominal that originates in the base-position (that is, in $A$-position) can be interpreted as a variable, then it should be possible to leave it in situ.

This analysis implies that movement (of the relative pronoun) is not triggered by feature checking. Recall that we have argued that there is no feature [+relative pronoun]. Thus, movement of the relative pronoun seems to be triggered by the need for a variable within the relative clause. This consequence is in fact motivated by a cross-linguistic correlation that the present analysis predicts.

The cross-linguistic pattern which we predict is summarized in the table below:

<table>
<thead>
<tr>
<th>Strategy for relativization</th>
<th>Relativizing pronoun</th>
<th>Representative language</th>
</tr>
</thead>
<tbody>
<tr>
<td>$A'$-movement</td>
<td>$d$-word/wh-word</td>
<td>German, Dutch, English</td>
</tr>
<tr>
<td>in situ</td>
<td>Personal Pronoun/gap</td>
<td>Swiss German, Tok Pisin</td>
</tr>
</tbody>
</table>

In other words, if a language makes use of the $A'$-strategy for relativization, the relative pronoun must be a nominal constituent, which contains a range (i.e., a $d$-word). If a language makes use of the ‘in-situ-strategy’ for relativization, then we expect either a gap or a personal (resumptive) pronoun in base position.\(^{24}\) This is indeed what we find. German makes use of the $A'$-strategy, and consequently $d$-words are used. Swiss German and Tok Pisin are two languages that make use of the ‘in-situ-strategy’.

Swiss German (more precisely Zürirütsch) does not have ‘relative pronouns’. A relative clause contains a subordinating complementizer. The relativized position is either occupied by a resumptive pronoun (indirect objects) or a gap (subjects and direct objects):

(61) a. d’ vrauw wo (*si) immer z spaat chunt
    the woman that (she) always too late comes
    the woman who is always late

    b. es bild wo niemert(*s) cha zale
    the picture that nobody(it) can pay
    the picture that nobody can pay

\(^{24}\) For the present purpose we can abstract away from the process of cliticization.
It has been argued in van Riemsdijk (1989) that relative clauses in Swiss German do not involve A’-movement. Thus, Swiss Relatives conform our prediction. On the one hand they do not exhibit A’-movement, and on the other hand the relativized position is occupied by an element that can be interpreted as a variable: either a gap or a personal pronoun.

According to Bresnan and Grimshaw (1978), Tok Pisin behaves similarly. Relative clauses are formed by base-generating the head NP with a relative clause containing a pronoun in anaphoric relation to the head:

(62) *Yutupela olsem wan* p*ikinini bilong me em idai*pinis.*
    you-dual like one child of me he die Aspect.

You two are like one of my children who died.

The pronoun may be omitted only in contexts of free pronoun deletion, and neither interrogative nor relative constructions are subject to Island Constraints. The latter property suggests that there is no A’-movement involved. Thus, Tok Pisin confirms the cross-linguistic correlation the present analysis predicts.

3.6. Left dislocation vs. clitic left dislocation

It is one of the main assumptions in this paper that the nature of a possible relative pronoun is largely determined by the constraints that the environment (i.e., the relative clause) imposes on it. We therefore predict that the cross-linguistic correlation discussed above holds not only for relative clauses but for this kind of configuration in general. A comparable environment to the one we find in relative clauses is found in (Clitic) Left Dislocation. In this ‘construction’ a full DP is left-adjoined to a clause, which contains a co-referent nominal element. For reasons not to be discussed here, the matrix clause in Left Dislocation needs to contain a variable (cf. Wiltschko 1997) just like a relative clause.25

In some languages (e.g., German), the co-referent nominal appears in topicalized position. In other languages (e.g., Italian) the co-referent nominal

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25 As with relative clauses (cf. fn. 22), there are apparent cases of Left Dislocation where only aboutness, rather than co-reference, is required. An anonymous reviewer points out the following example from French:

(i) Eh bien, tu sais, la grammaire générative, moi il me semble que Chomsky est éperdument fou.
    ‘Well, you know generative grammar, it seems to me that Chomsky is hopelessly crazy.’
appears in situ. The present analysis again predicts a correlation between the strategy and the form of the co-referent nominal. This prediction is summarized in the table below:

<table>
<thead>
<tr>
<th>Strategy for dislocation</th>
<th>Correlating pronoun</th>
<th>Representative language</th>
</tr>
</thead>
<tbody>
<tr>
<td>A'-movement in situ</td>
<td>d-word</td>
<td>German, Dutch</td>
</tr>
<tr>
<td></td>
<td>clitic/gap</td>
<td>Romance</td>
</tr>
<tr>
<td></td>
<td>personal pronoun</td>
<td>English</td>
</tr>
</tbody>
</table>

German (and Dutch) make use of the A'-movement strategy, and indeed the topicalized element has to be a d-word rather than a personal pronoun:

(63) Den Peter, **den**/ *ihn*, habe ich nicht gesehen.

   The Peter, d-word/*him*, have I not seen.

   Peter, I have not seen him.

The Romance counterpart of Left Dislocation is Clitic Left Dislocation. Here, the co-referent element in the matrix clause is a clitic and stays within its base position, where it can itself be interpreted as the bound variable.

English does not have d-words that can be used pronominally. The English counterpart of Left Dislocation is a left dislocated DP and a coreferent personal pronoun that stays in situ:

(64) John, I have seen **him**.

Thus, a brief cross-linguistic survey confirms the pattern the present analysis predicts. The matrix clause (within a (Clitic) Left Dislocation construction) needs to contain a variable. Personal pronouns (including clitics) on the one hand can be interpreted as variables. There is no need for A'-movement: the co-referent pronoun can stay in situ. In fact, it is predicted that the personal pronoun (since it cannot contain a range) cannot function as an A'-moved operator since it lacks a range. On the other hand, d-words cannot be interpreted as variables. Thus the A'-movement strategy comes into play.

3.7. **Topicalization**

A last environment that we have to look at is Topicalization in German, i.e., movement of a constituent to SpecCP. Again the present analysis makes the
right predictions. It is a well-known fact that (non-subject) personal pronouns in German cannot easily occur in SpecCP (cf. Travis 1984). There is a clear contrast between $d$-words and personal pronouns in topicalized position:

(65) Den/ $^{*}i$h$_n$, habe ich t, gesehen.
    d-word/ him, have I t, seen.
    I have seen him.

Assuming that topicalization is an instance of $A^{0}$-movement creating an operator-variable-chain, this pattern follows straightforwardly: the variable needs to be provided with a range, which only $d$-words but not personal pronouns can provide. 26

Moreover, the present analysis allows us to capture the following pattern. As expected, the neuter form of the personal pronoun is not possible in SpecCP; rather the $d$-word has to be used.

(66) Das/ $^{*}e$s, hat Peter t, bewundert.
    D-word/ it, has Peter t, admired.
    Peter admired it.

The reason for this behavior follows straightforwardly from the present analysis, and there are further arguments that this analysis is indeed correct.

For the sake of argument, consider the following alternative hypotheses. We could assume that personal pronouns in German cannot move as maximal projections. This would derive the fact that they cannot be moved to SpecCP, which is a position reserved for maximal projections. This hypothesis can easily be rejected since personal pronouns can undergo A-movement:

(67) ...weil e$r$, bewundert t, wurde.
    ...since he t, admired t, was.
    ...since he was admired.

A second hypothesis to derive the ill-formedness of the personal pronoun in (65) and (66) would be to assume that personal pronouns are (phonologically) too weak to appear in SpecCP. However, as (68) indicates, this cannot be the case. If $e$s ‘it’ is base-generated in SpecCP (i.e., the so-called ‘Vorfeld-es’), it can occur in this position:

26 Notice that stress on the personal pronoun can render the sentence in (65) well-formed (cf. Travis 1984). (This does not apply to neuter pronouns, which cannot bear stress):

(i) $^{*}I$h$_n$ hab ich gesehen.

Without going into detail, I will assume that this is an instance of contrastive stress. In this case we can assume that an empty focus operator is present. This implies that the moved element itself (i.e., the personal pronoun) does not have to provide the range for the variable; rather the Focus Operator provides the range.
There came a man through the door.

The contrast between (66) and (68) follows straightforwardly from the present analysis. The reason for the ill-formedness of the personal pronoun in (66) reduces to the RRV. If the personal pronoun is moved to SpecCP, it leaves a variable, which needs to be provided with a range. Personal pronouns cannot be used because they do not contain an NP. In (68) however, *es* ‘it’ is base-generated in SpecCP. There is no variable in the matrix clause, and consequently no range is required. Therefore it is possible to use the personal pronoun in this context. In fact, since it is an expletive, the *d*-word is not possible in this configuration (cf. section 3.2).

There is still one question to be addressed with respect to topicalization of personal pronouns. As noted earlier, the prohibition on personal pronouns occurring in sentence-initial position holds only for non-subjects. Subject personal pronouns can easily occur in sentence-initial position:

(69) Er hat ein Bier getrunken.
    he has a beer drunk.
He drank a beer.

In order to account for this pattern, I will assume that subjects in sentence-initial position do not (have to) occupy SpecCP. Thus, I will follow Travis (1984), who uses this pattern as evidence for the claim that the German IP is head-initial. Subjects in sentence-initial position are assumed to occupy SpecIP. This means, however, that in the case of sentence-initial subjects no operator-variable-chain is created; and therefore subject personal pronouns are perfectly well-formed in sentence-initial position.

4. Conclusion

In this paper it was argued that there is a fundamental syntactic difference between personal pronouns and so-called *d*-pronouns in German: the former are merely the spell-out of phi-features (instantiating the category AgrD) whereas the latter are instances of the definite determiner containing an elliptical (empty) NP. With this syntactic distinction it is possible to account for their different external syntax. Whereas only personal pronouns can be A-bound and be used as bound variables, only *d*-words can be used in SpecCP. This behavior was argued to follow from a general restriction on operator-variable-chains; they need to be associated with a range. With
this analysis it was also possible to start answering an important question: what is a relative pronoun? We have seen that dismissing the stipulation of a lexical feature [+relative pronoun] is theoretically and empirically motivated. This view however, leads to a variety of questions, some of which this paper addressed with the following arguments:

1. Personal pronouns cannot be used as relative pronouns because they are not associated with a range, which is however necessary to form an operator-variable-chain. We have seen a cross-linguistic correlation between the relativization strategy and the ‘pronominal’ element.

2. (Modern) English does not allow for the definite determiner to be used as a relative pronoun, because it cannot license an empty NP, due to the lack of agreement.

There are obviously many more questions to ask in order to achieve a full-fledged answer to the question concerning the nature of relative pronouns. I hope that this paper provides a fruitful starting point for future discussion of this issue.

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