1. Introduction: nonagreeing d-words in Dutch

In Dutch, fronted constituents, including subjects, can be resumed by a preverbal demonstrative pronoun, *die* (plural and nonneuter singular) or *dat* (neuter singular):¹²

(1) a. Die man doet taalkunde
   DEM-nn,sg man does linguistics

b. Die man die doet taalkunde
   DEM-nn,sg man DEM-nn,sg,sg does linguistics
   ‘That man does linguistics.’

(2) a. Dat boek leest bijna niemand
   DEM-n,sg book reads almost nobody

b. Dat boek dat leest bijna niemand
   DEM-n,sg book DEM-n,sg reads almost nobody
   ‘Hardly anybody reads that book.’

In (1b) and (2b), the demonstrative pronoun (henceforth referred to as *d-word*) agrees in number and gender with the fronted constituent that it resumes.

In this paper, we will discuss a class of fronting constructions in which the d-word does not agree in number and gender with the fronted constituent that it resumes. In these constructions, the neuter singular demonstrative pronoun *dat* appears:

(3) a. Die man dat is een soldaat
    DEM-nn,sg man DEM-n,sg is a soldier
    ‘That man is a soldier.’

b. Die mannen dat zijn soldaten
    DEM-pl men DEM-n,sg are soldiers
    ‘Those men are soldiers.’

¹ We would like to thank the anonymous reviewer and Jack Hoeksema for helpful comments. The authors are supported by grants from NWO, the Dutch Organization for Scientific Research.
We will discuss the distribution of the nonagreeing resumptive d-word, and we will argue that the d-word does not show agreement with the fronted constituent whenever it has the semantic type of a predicate (i.e. \(<e,t>\)), a proposal that in essence was already entertained by Partee (1986).

There are two cases to consider. First, the fronted constituent can be a predicate syntactically as well as by semantic type (e.g. a Small Clause predicate). This is the standard case in which the nonagreeing d-word appears. Second, the fronted constituent can be an argument syntactically, but a predicate by semantic type. This typically occurs when the fronted constituent is the subject of a Small Clause headed by a second order predicate (which has the semantic type \(<<e,t>,t>\)). Our analysis predicts, correctly, that the fronted subject of a Small Clause headed by a first order predicate (i.e. \(<e,t>\)) cannot be resumed by a nonagreeing d-word (as a predicate must be of a higher type than its subject).

2. The distribution of the nonagreeing d-word

We can make the following generalizations regarding the distribution of the nonagreeing d-word in Dutch:

1. The nonagreeing d-word is used when the fronted constituent it resumes is a predicate.
2. Elsewhere, the nonagreeing d-word can only be used if the fronted constituent is a Small Clause subject.

The first generalization is illustrated in the following examples:

(4) a Ik vind [Jan [een echte soldaat]]
   I consider John a real soldier
b Een echte soldaat, dat/*die vind ik [Jan e]
   a real soldier DEM-n,sg/nn,sg consider I John
(5) Een echte soldaat, die/*dat doet zoiets niet
   A real soldier DEM-n,sg/nn,sg does something-like-that not
(6) a ’t Zijn ambtenaren
   it are civil-servants

---

3 In this paper, we ignore specificational pseudoclefts, like What I mean is this, where what I mean seems to be the syntactic subject of the predicate this, and is of a higher type (\(<e,t>\) than the predicate (e). In Dutch specificational pseudoclefts, a nonagreeing d-word is used (Wie ik bedoel, dat is Jan ‘Who I mean, DEM-n,sg is Jan’). Possibly, our generalization can be strengthened: the nonagreeing d-word always is (or resumes an element) of a type higher than e. We will reserve the properties of pseudoclefts for further study, however (cf. Williams 1983, Partee 1986).

4 Here and below it must be understood that use of a resumptive d-word is never obligatory. When we say that a nonagreeing d-word is obligatory, this is correct only in the sense that if a d-word is used, it has to be of the nonagreeing type.
On Saying Dat

b Ambtenaren, dat/*die zijn 't
civil-servants DEM-n,sg/nn,sg are it
‘Civil servants, that’s what they are.’

(7) Ambtenaren, die/*dat werken hard
civil-servants DEM-nn,sg/n,sg work hard

(8) a Je bent onvergetelijk
you are-2sg unforgettable

b Onvergetelijk, dat/*die ben je
unforgettable DEM-n,sg/nn,sg are-2sg,inv. you
‘Unforgettable, that’s what you are.’

In (4), the verb vinden ‘consider’ selects a Small Clause complement, indicated by
the outer brackets, consisting of a subject Jan and a predicate een echte soldaat.
Fronting of the predicate een echte soldaat requires using the nonagreeing d-word,
as (4b) shows. If een echte soldaat has a syntactic function other than that of Small
Clause predicate, it must be resumed by an agreeing d-word (except where
generalization 2. above applies), as (5) shows.

In (6) and (8), ambtenaren and onvergetelijk are predicates of the subjects ’t
and je, respectively. We assume that the copula zijn (which has two 2sg present
tense forms, ben in inversion constructions, and bent elsewhere) selects a Small
Clause, the subject of which raises to the matrix subject position (cf. Hoekstra
1984):

(9) [IP SUBJECT, [VP COPULA [SC t, PREDICATE ]]]

Subsequent fronting of the predicate then requires using the nonagreeing d-word, as
(6b) and (8b) show. Again, if the same fronted element is not a predicate, as in (7),
an agreeing d-word must be used (modulo generalization 2. above).

When an entire verb phrase (VP) is fronted, the resumptive pronoun must again
be dat:

(10) [Het boek gelezen] dat heb ik niet
the book read-pcple DEM-n,sg have-1sg I not

Since a VP is a predicate, this falls within generalization 1. above.

The second generalization above, according to which the nonagreeing d-word
resumes a Small Clause subject, is illustrated by (3), and by the following examples
(see De Rooy 1970 for excellent discussion of this phenomenon):

(11) a Ik vind [Jan [een echte soldaat]]
    I consider John a real soldier

    b Jan dat/die vind ik [ e [een echte soldaat]]
    John DEM-n,sg/nn,sg consider I a real soldier

(12) Jan die/*dat doet zoiets niet
    John DEM-nn,sg/n,sg does something-like-that not
There is a third class of cases where the nonagreeing d-word appears (De Vries 1910-1911). As discussed below, a subject cannot be resumed by the nonagreeing d-word when the predicate is an adjective (see (i)). However, when the subject contains an adjective or some other modifying element, a nonagreeing d-word is possible in some cases (ii)-(iii):

(i) *Ambtenaren dat is vervelend
Civil-servants DEM is annoying

(ii) Luie ambtenaren dat is vervelend
lazy civil-servants DEM is annoying

(iii) Die ambtenaar dat was vervelend
DEM civil-servant DEM was annoying

In (ii) and (iii), the fronted constituents are ‘honorary NPs’ in the sense of Safir (1983). The d-words in these sentences do not refer to a particular civil servant or class of civil servant, but rather to the situation of having that civil servant, or that class of civil servants, around. The proper generalization appears to be that the agreeing d-word refers to concrete objects (of type $e$), whereas the nonagreeing d-word denotes more abstract objects (of higher types than $e$), such as properties, situations, or propositions (see also the discussion of example (23) below).

In certain copular constructions, notably equative constructions like Clark Kent is Superman, it is not always clear which noun phrase is the subject and which is the predicate. One might be tempted to propose that the function of the elements in the Small Clause constructions discussed here is indeterminate in the same way. In other words, one might suppose that what we have identified as Small Clause subjects are in fact Small Clause predicates, thereby reducing generalization 2. in the text to generalization 1. However, many syntactic tests testify to the clear Small Clause subject status of die man in (3a), and likewise in the other examples. Note that the resumptive d-word may also appear in situ, as in (i):

(i) Jan, ik vind dat een echte soldaat
John I consider DEM a real soldier

The position of dat w.r.t. een echte soldaat now shows that dat is the Small Clause subject and een echte soldaat is a predicate. When the d-word is not in situ, other syntactic tests yield the same result. Note that, under neutral intonation, Small Clause predicates follow sentence adverbs, and, when indefinite, fuse with the negation element niet to yield geen. These tests show that een soldaat in (ii) is a predicate, rather than a subject (cf. (iii)-(iv)):

(ii) Jan, dat is een soldaat
John DEM is a soldier
3. Nonagreeing d-words are always of type \(<e,t>\)

We would like to propose that the characteristic unifying both kinds of nonagreeing d-words is their semantic type: nonagreeing d-words have the semantic type of a predicate, i.e. \(<e,t>\) (or an intensionalized version thereof), even when syntactically they are subjects.\(^7\) Agreeing d-words, on the other hand, are always of the object denoting type \(e\). In essence our proposal can already be found in Partee (1986), who suggests that English *that* is of type \(<e,t>\) when it is used to pick out a human, as in *That is the president.*

Thus, in (11b), for instance, the agreeing d-word *die* is of type \(e\) and refers to the object denoted by *Jan*, say \(j\). The non-agreeing d-word *dat* on the other hand is of type \(<e,t>\); we propose that it denotes the singleton set that has Jan as its only member, \{\(j\}\}. By claiming that nonagreeing d-words are always of type \(<e,t>\), we unify cases where the nonagreeing d-word represents a subject, like (3b) or (11b), with cases where it is a syntactic predicate such as (4b), (6b), (8b), and (10b).

Of course, our hypothesis that a nonagreeing d-word that is the subject of a Small Clause has the semantic type of a predicate immediately raises the question how it can be combined with the syntactic predicate of the Small Clause. In our view this can only happen if the syntactic predicate semantically is a *second order* predicate, in other words, a set of sets. This means that when the subject of the Small Clause is a nonagreeing d-word of type \(<e,t>\), then the syntactic predicate of the Small Clause must be of type \(<<e,t>,t>\), a generalized quantifier.

Assuming that only DPs can denote generalized quantifiers,\(^8\) this gives rise to the following prediction:

If the subject of the Small Clause is a nonagreeing d-word, then the predicate must be a DP.

Below we will see that this prediction is fully borne out.

\(^{7}\) Throughout we will only consider extensional types. Our analysis can easily be extended to intensional types, however. A further variant we won’t discuss is that nonagreeing d-words denote a nominalized property in Chierchia’s sense (cf. Partee 1986, 1987).

\(^{8}\) This assumption is one half of the NP-Quantifier universal proposed by Barwise and Cooper (1981), updated to DPs.
Before considering the semantics of sentences with nonagreeing d-words in more detail, let us take a step back and discuss Small Clauses the subject of which is a proper name. Examples are given in (13) and (14):

(13) Ik vind [Jan dapper].
I consider John brave
(14) Ik vind [Jan een soldaat].
I consider John a soldier

A Small Clause can only be interpreted if its subject and its predicate have compatible types. The predicate must denote a function which takes things that have the type of the subject and yields a truth value. Thus, if the type of the subject is $X$, then the predicate must be of type $<X,t>$.

In (13) the predicate is the AP dapper ‘brave’ which is of type $<e,t>$ and can therefore be applied directly to the subject Jan which is of type $e$. In (14), however, the predicate is the DP een soldaat ‘a soldier’ which is of type $<<e,t>,t>$ (a generalized quantifier) and therefore cannot combine directly with a subject of type $e$. Following Partee (1987) we will assume that there is a type-shift operation called BE (not to be confused with the copula be) which lowers an expression of type $<<e,t>,t>$ to one of type $<e,t>$:

\[
\text{Type lowering (Partee 1987)}
\]
\[
\text{BE} \quad <<e,t>,t> \Rightarrow <e,t> \quad \quad \quad [\text{BE(DP)}] = \{x | \{x\} \in [\text{DP}]\}
\]

Intuitively, BE picks out all the singletons from a generalized quantifier and collects their elements in a set. If een(soldaat) denotes the generalized quantifier $\{X | X \cap \text{SOLDAAT} \neq \varnothing\}$ (the set of all sets that have a non-empty intersection with the set SOLDAAT), then BE(een(soldaat)) denotes the set SOLDAAT, the set of all soldiers. Thus, by applying BE to the generalized quantifier denoted by a singular indefinite noun phrase we get back an object of type $<e,t>$, namely the set denoted by the head noun. After the Small Clause predicate een soldaat in (14) is lowered to type $<e,t>$, it can apply to the subject Jan which is of type $e$. (14) is true iff Jan is a member of the set SOLDAAT. The calculation of the truth conditions of the Small Clause in (14) is shown in (14'):

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9 For quantified subjects like iedere jongen ‘every boy’, which are of type $<<e,t>,t>$, we can adopt one of two options. Either a quantified subject can combine directly with a predicate of type $<e,t>$ by taking the latter as its argument (rather than vice versa), or quantified subjects obligatorily undergo Quantifier Raising leaving a trace of type $e$. 
If the subject is an agreeing d-word such as *die* in (15) and (16), the situation is essentially the same:

(15)  
<table>
<thead>
<tr>
<th>Jan</th>
<th>die</th>
<th>vind ik</th>
<th>[t dapper].</th>
</tr>
</thead>
<tbody>
<tr>
<td>John</td>
<td>DEM-nn,sg</td>
<td>consider</td>
<td>brave</td>
</tr>
</tbody>
</table>

(16)  
<table>
<thead>
<tr>
<th>Jan</th>
<th>die</th>
<th>vind ik</th>
<th>[t een soldaat].</th>
</tr>
</thead>
<tbody>
<tr>
<td>John</td>
<td>DEM-nn,sg</td>
<td>consider</td>
<td>a soldier</td>
</tr>
</tbody>
</table>

Die is of type $e$ and therefore the predicate of the Small Clause must be of type $<e,t>$, either inherently or after type-lowering by *be*.

Now consider the corresponding sentences with the nonagreeing d-word *dat*. Importantly, *dat* cannot be used when the predicate is an AP like *dapper* ‘brave’ in (17):

(17)  
<table>
<thead>
<tr>
<th>*Jan</th>
<th>dat</th>
<th>vind ik</th>
<th>[t dapper].</th>
</tr>
</thead>
<tbody>
<tr>
<td>John</td>
<td>DEM-n,sg</td>
<td>consider</td>
<td>brave</td>
</tr>
</tbody>
</table>

Assuming that nonagreeing d-words are always of type $<e,t>$ it is easy to see why (17) is ungrammatical. Both the subject and the predicate of the Small Clause are of type $<e,t>$, which makes it impossible for one expression to take the other as its argument. The sentence is therefore uninterpretable because of the incompatibility of types.

In (18), however, the situation is different:

(18)  
<table>
<thead>
<tr>
<th>Jan</th>
<th>dat</th>
<th>vind ik</th>
<th>[t een soldaat].</th>
</tr>
</thead>
<tbody>
<tr>
<td>John</td>
<td>DEM-n,sg</td>
<td>consider</td>
<td>a soldier</td>
</tr>
</tbody>
</table>

Here the predicate is a DP and therefore has type $<<e,t>,t>$. Since the subject is of type $<e,t>$, we can directly apply the predicate to the subject. Below it is shown that we obtain the right result: the Small Clause is true iff Jan is an member of the set *SOLDAAT*:

(18')  
<table>
<thead>
<tr>
<th>dat</th>
<th>{}</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>een(soldaat)</em></td>
<td>${X \mid X \cap <em>SOLDAAT</em> \neq \emptyset}$</td>
</tr>
<tr>
<td><em>een(soldaat)(dat)</em></td>
<td>${j} \subseteq {X \mid X \cap <em>SOLDAAT</em> \neq \emptyset}$ iff $j \in <em>SOLDAAT</em>$</td>
</tr>
</tbody>
</table>

Note that this does not involve the type lowering *be*.

(14) and (16) on the one hand and (18) on the other hand can be viewed as employing two different strategies to combine a subject with a DP predicate. In (14)
and (16) the predicate is lowered to type \(<e,t>\) so it can combine with a subject of type \(e\). In (18) the subject \(\text{dat}\) is of type \(<e,t>\), which makes it possible for a predicate of type \(<<e,t>,t>\) to apply to it directly.

4. Some consequences

Our proposal makes a number of empirical predictions.

First, as already mentioned, we expect that a nonagreeing d-word can only be used as the subject if the predicate is a generalized quantifier, hence a DP. The contrast between (17) and (18) already indicates that the predicate cannot be an AP. Further support for our proposal is based on the fact that in Dutch bare nouns can be used as predicates under certain circumstances, in particular when they refer to a certain social role or profession:

(19) Jan is soldaat.
    John is soldier
    ‘John is a soldier.’

We will assume that syntactically such bare nouns are NPs (as opposed to DPs) and that because they lack a determiner their semantic type is that of a predicate, namely \(<e,t>\). Just like an AP, a bare noun can therefore not be the predicate if the subject is a nonagreeing d-word, whereas there is no problem if the subject is an agreeing d-word (cf. de Rooy 1970):

(20) Jan die/*dat is soldaat.
    John DEM-nn,sg/n,sg is soldier

The contrast in (20) is reminiscent of a similar contrast in English that was noted by Higgins (1973) (see also Partee 1986):

(21) a John is (the) mayor of Cambridge.
    b That is *(the) mayor of Cambridge.

A second empirical consequence is that a nonagreeing d-word cannot be the subject or object of a verb which takes arguments of type \(e\). Assuming that extensional verbs have this property (Partee and Rooth 1983), this explains why d-words must agree in examples like (5), (7), and (12) and also the following:

(22) Jan die/*dat heb ik gezien.
    John DEM-nn,sg/n,sg have I seen

It has been argued recently, by Zimmerman (1992-93), that the objects of intensional verbs like \(\text{seek}\) are of a predicative type rather than full generalized
quantifiers. This is confirmed by the fact that such arguments can be expressed by a nonagreeing d-word, which we have argued to be predicative:

(23) Een eenhoorn die/dat zoek ik.
    a unicorn DEM-nn,sg/n,sg seek I
    ‘A unicorn that’s what I’m looking for.’

Notice that the agreeing d-word die can be used here too, but this gives the sentence a de re rather than a de dicto reading, as is to be expected if agreeing d-words are always of type $e$.

A third prediction following from our theory is that a preposed predicate can be resumed only by a nonagreeing d-word. As noted above, this is borne out by the facts (see Ross 1969 and Partee 1987 for observations on the use of that as a predicate in English):

(24) Soldaat/Een soldaat/Groot *die/dat is Jan.
    soldier/a soldier/big DEM-nn,sg/n,sg is John

5. Other singular DPs as predicates

In section 3 we have shown how a singular indefinite DP like een soldaat ‘a soldier’ can be the predicate of a Small Clause of which the subject is either of type $e$ (such as a name or an agreeing d-word) or of type $<e,t>$ (a non agreeing d-word). Singular indefinites are not the only kind of DPs that can be predicates, of course. We will first discuss other types of singular DPs and then in the next section turn to plurals.

Partee (1987) has shown that her type lowering operation BE can be meaningfully applied to DPs whose determiner is $a(n)$, the or no, but not every. When we apply BE to the generalized quantifier denoted by every soldier the result will be the empty set whenever there are two or more soldiers (the reason being that in that case the generalized quantifier does not contain any singletons). Partee argues that this is why a universally quantified DP cannot be used as a predicate:

(25) John is a/the/no/*every soldier.

In Dutch we find parallel data: when the subject is an agreeing d-word, the predicate can be a DP headed by an indefinite or a definite determiner (een ‘a’ or de ‘the’, respectively) or geen ‘no’, but not iedere ‘every’:

(26) Jan die is een/de/geen/*iedere soldaat.
    John DEM-nn,sg is a/the/no/every soldier
In (26') we show what the result of applying \( \text{BE} \) to each of these DPs is (except for \( \text{een soldaat} \) which was already discussed in section 2). Note the degenerate result in the case of \( \text{iedere} \) ‘every’:

(26')

<table>
<thead>
<tr>
<th>Case</th>
<th>Formula</th>
</tr>
</thead>
<tbody>
<tr>
<td>a ( \text{de(soldaat)} )</td>
<td>( {X</td>
</tr>
<tr>
<td>( \text{BE(de(soldaat))} )</td>
<td>( {x</td>
</tr>
<tr>
<td>b ( \text{geen(soldaat)} )</td>
<td>( {X</td>
</tr>
<tr>
<td>( \text{BE(geen(soldaat))} )</td>
<td>( {x</td>
</tr>
<tr>
<td></td>
<td>( {x</td>
</tr>
<tr>
<td></td>
<td>( \text{U-SOLDAAT} )</td>
</tr>
<tr>
<td>c ( \text{iedere(soldaat)} )</td>
<td>( {X</td>
</tr>
<tr>
<td>( \text{BE(iedere(soldaat))} )</td>
<td>( {x</td>
</tr>
<tr>
<td></td>
<td>( \emptyset ) whenever ( \text{card(SOLDAAT)} ) \geq 2.</td>
</tr>
</tbody>
</table>

What if the subject is a nonagreeing d-word? Since in that case the subject is of type \( <e,t> \), application of \( \text{BE} \) to the predicate is not necessary. Hence we expect all singular DPs to be able to function as the predicate. In particular, there should be no problem with the universal quantifier \( \text{iedere soldaat} \) ‘every soldier’:

(27) Jan dat is \( \text{een/de/geen/iedere soldaat} \).
    John  DE\-n,sg is a/the/no/every soldier

Although admittedly the variant of (27) with \( \text{iedere} \) ‘every’ is not perfect (a fact for which we have no good explanation), it improves markedly when we add a relative clause. Thus, we find a sharp contrast in (28) between using the agreeing \( \text{die} \) or the nonagreeing \( \text{dat} \):

(28) Jan *die/dat is iedere soldaat die we hebben.
    John  DE\-mn,sg/n,sg is every soldier that we have

Notice also that in English we find the same contrast between using a name or the demonstrative \( \text{that} \):

(29) *John/That is every soldier we have.
The calculation in (31') implies that in order for (31) to be true it is only necessary that the set denoted by \textit{dat} include two soldiers. Any additional individuals also included in this set are irrelevant for the truth conditions. In other words, (i) will turn out to be true:

(i) Jan, Piet en Bert dat zijn twee soldaten.

Although this sentence does intuitively strike one as being false or at least odd, we believe this fact can ultimately be given a pragmatic explanation along Gricean lines. The sentence is literally true, but it would be misleading to utter it because the speaker uses the preposed DP to refer to a group of people which explicitly includes more than just two soldiers. The implicature that \textit{dat} refers to a set consisting of just two soldiers can be cancelled by adding expressions of uncertainty. (ii) for instance is much less odd than (i):

(ii) Jan, Piet en Bert dat zijn misschien niet meer dan twee soldaten

6. Plurals

Nonagreeing d-words can not only be used to resume preposed singular DPs, but also plurals:

(30) Jan en Piet dat zijn de soldaten.

John and Pete are the soldiers

We assume that the plural \textit{dat} is also of type \langle e,t \rangle and hence denotes a set. In (30) this would be the set containing just Jan and Piet (i.e. \{j,p\}). This means that when \textit{dat} is the subject, the predicate can be any DP, and this is indeed what we find:

(31) Jan en Piet dat zijn
twee/minder dan vijf/alle/de meeste soldaten
two/fewer than five/all/most soldiers

(31') is a sample calculation of the truth conditions of sentences of this type. The other cases are exactly parallel.\(^{10}\)

\(^{10}\) The calculation in (31') implies that in order for (31) to be true it is only necessary that the set denoted by \textit{dat} include two soldiers. Any additional individuals also included in this set are irrelevant for the truth conditions. In other words, (i) will turn out to be true:

(i) Jan, Piet en Bert dat zijn twee soldaten.

John, Pete and Bert are two soldiers

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(ii) Jan, Piet en Bert dat zijn misschien niet meer dan twee soldaten

John, Pete and Bert are perhaps not more than two soldiers
By contrast, the agreeing d-word *die* is incompatible with a plural DP as predicate:

(32) *Jan en Piet die zijn
two/fewer than five/all/most soldiers

John and Pete are

The reason is that all these DPs yield degenerate results when Partee’s type-lowering BE is applied to them. They will always denote either the empty set or the whole domain of quantification U (cf. Partee 1987). (32’) gives an example of both cases:

(32’) a zwei(soldaat) BE(zwei(soldaat))
min. d. vijf(sold.) BE(min. d. vijf(sold.))

There is one apparent counterexample to our claim that the subject cannot be an agreeing d-word if the predicate is a plural DP. This concerns bare plurals. At least for some speakers (but apparently not for all) (33) is fine:

(33) %Jan en Piet die zijn soldaten

We would like to argue that here the predicate is not a DP, but a bare NP which shows number agreement with its subject.

Recall that bare NPs are of type <e,t>, just like APs, which explains why they can combine with a subject of type e. Number agreement in bare NPs is not obligatory in Dutch, as can be seen in (34) (in fact, for those speakers who reject (33), number agreement in bare NPs is even excluded):

(34) Jan en Piet die zijn soldaat

When the subject is the non-agreeing d-word *dat* only the plural form *soldaten* is allowed:
(35)  Jan en Piet  dat  zijn  *soldaat/soldaten.
    John and Pete  DEM-n,sg  are  soldier/soldiers

The ungrammaticality of the singular soldaat is as expected: dat is of type \(<e,t>\) and hence cannot have a bare NP, which is of the same type, as its predicate. The grammaticality of the plural soldaten indicates that here soldaten should not be analyzed as a bare NP, but as a full DP with an empty determiner. Hence the nominal predicate soldaten in (33) has a different syntactic and semantic status than its homophonous counterpart in (35). Whereas soldaten in (33) is a bare NP showing number agreement with the subject (which is impossible for some speakers), soldaten in (35) is a plural DP with an empty indefinite determiner.

Evidence supporting this view can be obtained by adding an adjective to the nominal predicate. As (36a) shows, a bare NP cannot be modified by an adjective. The plural goede soldaten (‘good soldiers’) in (36b) can therefore only be a DP and is hence incompatible with the agreeing d-word as the subject, even for speakers who accept (33):

(36)  a  Jan  die  is  (*goed)  soldaat
       John  DEM-nn,sg  is  good  soldier

    b  Jan en Piet  *die/dat  zijn  goede  soldaten
       John and Pete  DEM-nn,pl/n,sg  are  good  soldiers

7. Conclusion

We have demonstrated that the morphological form of d-words in Dutch is sensitive to semantic type as opposed to syntactic function. D-words which denote individuals have to agree in gender and number with the fronted constituent, whereas d-words which denote sets (or properties in an intensional setting) invariably take the form of singular neutral dat. This is true independently of whether the d-word has the syntactic function of argument or predicate. Our analysis allows us to account for several facts that until now had been mysterious, perhaps most importantly the generalization that a nonagreeing d-word can only be the subject of a Small Clause the predicate of which is a DP. In our analysis we have adopted Partee’s (1987) approach which allows expressions to have several semantic types related by type shifting operations such as be. By providing evidence that a syntactic subject can not only be of type e (when it is a name, for instance) or \(<<e,t>,t>\) (when it is a quantifier), but also of type \(<e,t>\), we have given additional empirical support for a flexible relation between syntactic categories and semantic types which is many-to-many rather than one-to-one.

We conclude this paper with an appendix containing a somewhat speculative discussion of the implications of our analysis for the status of lexical subjects.
Appendix: Lexical subjects reconsidered

In the main text of this paper we have largely ignored the semantics of sentences in which the fronted constituent is not resumed by a d-word. One question that can be raised in this connection, is whether in those cases lexical subjects (such as names) can be of type $<e,t>$, just like nonagreeing d-words. In fact we believe that this is the case.

Recall that crucial evidence supporting the hypothesis that nonagreeing d-words are of the type $<e,t>$ resides in the fact that nonagreeing d-words can be combined with those DP predicates that could not have undergone the type lowering operation $\text{BE}$ (applying $\text{BE}$ to these DP predicates would lead to a degenerate result (cf. (28) and (31))). Now the same predicational DPs that can be used with a nonagreeing d-word can also be used with lexical subjects:

(37)  a  Jan is iedere soldaat die we hebben
      John is every soldier that we have
     b  Jan en Piet zijn
twee/minder dan vijf/alle/de meeste soldaten
two/fewer than five/all/most soldiers

One way of analyzing these examples might be to assume that they involve a silent or deleted d-word which resumes the subject (as in Koster’s 1978 analysis of topicalization of clauses in Dutch). However, no such analysis is possible for the cases in (38) where the Small Clause is a complement of a verb and its subject appears in situ rather than fronted:

(38)  a  Ik acht Jan iedere soldaat die we hebben
      I consider John every soldier that we have
     b  Ik acht Jan en Piet
twee/minder dan vijf/alle/de meeste soldaten
two/fewer than five/all/most soldiers

The implication is that these lexical DP subjects must have type $<e,t>$. How can this be?

We propose that such subjects have undergone another of Partee’s type shifting operations, which she calls $\text{IDENT}$. This operation lifts a noun phrase of type $e$ to one of type $<e,t>$:

\[
\text{Type-lifting (Partee 1987)}
\]

\[
\text{IDENT} \quad <e> \Rightarrow <e,t> \quad [\text{IDENT(DP)}] = \{x | x = [\text{DP}]\}
\]
Note that Partee’s IDENT maps an individual onto the singleton set containing it. Thus, j (Jan) is mapped onto the set \{j\}. The alternation between the agreeing die and its nonagreeing allomorph dat can now be reinterpreted as an overt morphological reflex of this type-shift when it applies to a d-word.

To deal with plural subjects like Jan en Piet in (37b) and (38b) we could use another of Partee’s type-shifts, DELINK, which maps a sum or group of individuals onto a set containing all and only the atomic individuals that it consists of. Thus when DELINK is applied to j+p, the sum of Jan and Piet, it would yield the set \{j,p\}. Since an analysis of groups lies outside the scope of this paper we leave the precise implications of this proposal for further research.

One consequence of the hypothesis that lexical subjects can also be of type \(<e,t>\) is that now we have two ways of resolving the type conflict that arises when the subject of a Small Clause is of type \(e\) and its predicate is of type \(<<e,t>,t>\). Either the predicate can be lowered to type \(<e,t>\) by means of BE or the subject can be raised to type \(<e,t>\) by means of IDENT. In either case we end up with a situation in which the subject and the predicate can be combined semantically. This implies that there is a dual analysis for sentences like (39):

(39) Jan is een soldaat.
    John is a soldier

This does not mean that (39) is (truthconditionally) ambiguous, however. Whether we lower the predicate or raise the subject, the sentence will be true iff Jan is a member of the set of soldiers.

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