# THREE AGREEMENT ALTERNATIONS IN DUTCH AND THEIR INTERACTIONS

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## 1. INTRODUCTION

In Dutch, there are three factors that trigger alternations in subject-verb agreement: subject-verb inversion, verb class, and politeness. We illustrate each in turn. (i) As shown in (1), the morpheme that encodes second person singular on a finite verb is omitted under inversion. (ii) The modal verb *kunnen* 'can' has two distinct stems, as shown in (2). Both can be used in the second person, giving rise to a second agreement alternation because only one of the stems allows an overt second person agreement ending. The same holds, with some variation, of other modals (in (2) 'hon' stands for honorific). (iii) The verb *hebben* 'have' also has two stem allomorphs, as shown in (3). One, namely *heb*, shows up in the first person singular, the informal second singular and all plural forms. The other, *heef*, appears in the third person singular. The polite second person singular can be built on either, which suggests that it can alternate between second and third person singular agreement.

(1) a. Jij loop**t** dagelijks met een hondje over straat.
*you walk-2SG daily with a doggy across street*
'Every day you walk with a doggy in the street'

b. Dagelijks loop jij met een hondje over straat.
*daily walk you with a doggy across street*
'Every day you walk with a doggy in the street'

(2)

| CAN | ***Kan* forms** | ***Kun* forms** |
|---|---|---|
| **1sg** | Ik kan | *Ik kun |
| **2sg** | Jij kan | Jij kun**t** |
| **2sg hon** | U kan | U kun**t** |
| **3sg** | Hij kan | *Hij kun**t** |
| **1/2/3pl** | *Wij/jullie/zij kann**en** | Wij/jullie/zij kunn**en** |

(3)

| HAVE | ***Heb* forms** | ***Heef* forms** |
|---|---|---|
| **1sg** | Ik heb | *Ik heef |
| **2sg** | Jij heb**t** | *Jij heef**t** |
| **2sg hon** | U heb**t** | U heef**t** |
| **3sg** | *Hij heb**t** | Hij heef**t** |
| **1/2/3pl** | Wij/jullie/zij hebb**en** | *Wij/jullie/zij hev**en** |

These alternations interact in several ways. To give one example, it is striking that the alternation illustrated in (1) does not apply when the polite form of the second person pronoun is used as the subject, even though this form allows second person agreement:

(4) a. Heb/*hebt jij ook een hondje?
*have/have-2SG you also a doggie*
'Do you also have a doggie?'

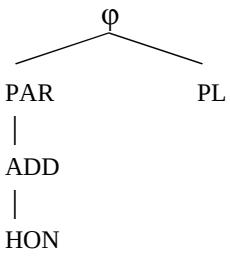
b. Hebt/*heb u ook een hondje?
*have-2SG/have you.HON also a doggie*
'Do you (polite) also have a doggie?'

The main claim of this paper is that the above alternations and their interactions can be analyzed in terms of specific feature deletion rules (also known as rules of impoverishment), provided that phi-features are organized in a geometry that restricts the set of possible deletions. We will introduce the feature geometry in question in section 2. In section 3 we discuss agreement weakening under inversion, following earlier work in Ackema and Neeleman 2003. In section 4 we will analyze the agreement paradigms of irregular verbs and show how the agreement weakening rule applies to them. In section 5, we turn to polite forms, discussing the alternation between second and third person agreement and the lack of agreement weakening of the polite second person forms under inversion. Section 6 discusses a particular characteristic of the feature geometry adopted here, namely that it adopts a feature encoding reference to an addressee, but not one encoding reference to the speaker. Section 7 summarizes the main findings of the paper.

## 2. FEATURE GEOMETRY AND SPELL-OUT

Our starting point is the assumption that φ-features are privative and organised in a feature geometry. When a feature restricts the interpretation of another feature, it is represented as a daughter of that feature. The idea goes back at least to Gazdar and Pullum 1982; a detailed proposal has more recently been developed in Harley and Ritter 2002. The part of the φ-feature geometry relevant for Dutch is given below.

(5)




The root of the tree in (5) is occupied by a general feature, [φ], associated with the reference of nominal categories. The interpretation of this feature may be restricted by person, number and gender features (the latter are not considered here, as they play no role in the phenomena to be discussed). A single feature is enough to characterize the number system of Dutch, namely [PL] for 'plural'. The person system can be characterized using two features: [PAR] and [ADD] for 'participant in the speech act' and 'addressee', respectively (for discussion, see Kerstens 1993, Harley and Ritter 2002, and Ackema and Neeleman 2004). The latter restricts the interpretation of [PAR], and is therefore taken to be dependent on this feature. In order to distinguish polite forms from familiar addressee forms it is necessary to introduce a feature [HON] for 'honorific'. This feature must be dependent on the [ADD] feature, since only second person pronouns have a polite variant in Dutch.

The Dutch phi-feature system can thus be analyzed as in (6). We assume that the various feature geometries are relevant both to pronouns and to verbal agreement. We further assume that even where the overt forms do not reflect all features that characterize a given interpretation, all features are present syntactically. The overt forms are the result of spell-out rules that refer to these features, in combination with language-specific rules of impoverishment that delete certain features in particular contexts, prior to phonological realization. Such rules have been proposed by various authors, including Bonet 1991, 1995 and Harley 1994. The picture that emerges is familiar from a number of theories that assume that phonological realization of syntactic structure is achieved through 'late lexical insertion' (see, for example, Den Besten 1977, Sproat 1985, Halle & Marantz 1993).

(6)

| | 1st | 2nd familiar | 2nd polite | 3rd |
|---|---|---|---|---|
| SG | a. φ \| PAR | b. φ \| PAR \| ADD | c. φ \| PAR \| ADD \| HON | d. φ |
| PL | e. φ: PAR, PL | f. φ: PAR \| ADD, PL | g. φ: PAR \| ADD \| HON, PL | h. φ \| PL |

The spell-out rules that insert the overt forms of Dutch subject pronouns are given below. We abstract away from the existence of object pronouns, as these are not relevant to agreement. We also abstract away from gender distinctions in the third person singular.

(7)
a. $[_{\varphi}$ PAR$] \Leftrightarrow$ /ik/ / $[_{D}$ __ $]$
b. $[_{\varphi}$ PAR ADD$] \Leftrightarrow$ /jij/ / $[_{D}$ __ $]$
c. $[_{\varphi}\ ] \Leftrightarrow$ /hij/zij/het/ / $[_{D}$ __ $]$
d. $[_{\varphi}$ PAR PL$] \Leftrightarrow$ /wij/ / $[_{D}$ __ $]$
e. $[_{\varphi}$ PAR ADD PL$] \Leftrightarrow$ /jullie/ / $[_{D}$ __ $]$
f. $[_{\varphi}$ PL$] \Leftrightarrow$ /zij/ / $[_{D}$ __ $]$

Which of these rules applies to a syntactic input is partially determined by the Elsewhere Principle (compare Kiparsky 1973). We formulate this principle below.

(8) *Elsewhere Principle:* Let $R_1$ and $R_2$ be competing rules that have $D_1$ and $D_2$ as their respective domains of application. If $D_1$ is a proper subset of $D_2$, then $R_1$ blocks the application of $R_2$ in $D_1$.

The general effect of the Elsewhere Principle for spell-out is that where two or more rules may realize a syntactic feature cluster, the rule that has the most specific structural description must be used. For example, if the syntactic input is as in (6b), then any of the

rules in (7a-c) may in principle be applied, as the structural description of each of these rules is compatible with the input. The rules in (7d-f) cannot be applied, as they mention the feature [PL], which is absent in (6b). The choice between (7a-c) is determined by the Elsewhere Principle. The domain of application of (7b) is a subset of the domains of application of (7a) and (7c), since (7b) can spell out only (6b), where (7a) and (7c) can in principle be applied to (6a,b) and (6a-c), respectively. Therefore, (6b) must be spelled out by (7b).

The Elsewhere Principle is also relevant to the interpretation of the various objects in (6). In general, the interpretation of the absence of a feature is the negation of that feature, as long as another feature combination is available that does contain the feature in question. For example, the feature bundle in (6a) could in principle be interpreted as referring to either the speaker or the hearer, as both are participants in the speech act. The fact that only the former interpretation is available is due to the fact that there is a more highly specified feature combination that can only be interpreted as hearer, namely (6b). The Elsewhere Principle then determines that (6a) can *not* be taken to refer to the hearer, leaving reference to the other participant, the speaker, as its only possible reference.

We have thus far ignored the polite forms in (6). The reason for this is that there is no distinct plural form of the polite pronoun *u*. Moreover, the polite pronoun never triggers plural agreement, not even when it refers to a group:

(9) a. U heeft natuurlijk allemaal/allebei de troonrede gehoord.
*You.HON has of.course all/both the queen's-speech heard*
'Of course, you will all/both have heard the queen's speech.'
b. *U hebben natuurlijk allemaal/allebei de troonrede gehoord.
*You.HON have of.course all/both the queen's-speech heard*

There are two possible accounts for this behaviour, which make use of underspecification and impoverishment, respectively. The first account simply states that Dutch does not have a pronoun specified as (6g) in its lexicon. As a result, the polite pronoun *u*, which is specified as in (6c), can receive a plural as well as a singular interpretation. The singular interpretation is unsurprising. The plural interpretation is allowed because in the absence of a pronoun specified as in (6g) this is not blocked by the Elsewhere Principle.

The second account assumes that there is a pronoun specified as in (6g), but that Dutch has a rule of impoverishment that deletes [PL] in the context of [HON]. We may formulate this rule as in (10), with (11) as the relevant additional spell-out rule.

(10) $[\text{PL}] \rightarrow \emptyset \; / \; [_{\varphi} \_\_ \; \text{HON}]$

(11) $[_{\varphi} \; \text{ADD PAR HON}] \Leftrightarrow /u/ \; / \; [_{D} \_\_ \; ]$

The rule in (10) is intended to be maximally general: it targets all forms specified for these features. This implies that the phonological realization of the polite plural pronoun will be identical to that of the polite singular pronoun. It also implies that the verbal agreement ending accompanying this pronoun will be identical to the singular form, even

though it is assumed that the ending is syntactically specified as [PL] (we discuss verbal agreement in more detail below).

The two accounts make different predictions with regards to the syntactic behaviour of polite pronouns with a plural interpretation. According to the underspecification account, a plural interpretation of *u* is purely semantic in nature and hence should not give rise to any syntactic effect. According to the impoverishment account, there should be effects of the syntactic presence of the [PL] feature.

There are some data that support the view that *u* is syntactically plural if it has a plural interpretation. In the earlier example in (9a) it can be observed that the polite pronoun can successfully be associated with floating quantifiers like *allemaal* 'all' and *allebei* 'both'. However, the presence of these quantifiers is not licensed in the context of a DP associate that is semantically plural, but syntactically singular. This is illustrated by the examples in (12). The plural pronouns in the continuations indicate that the collective nouns *familie* 'family' and *stel* 'couple' receive a plural interpretation. Nevertheless, they cannot be associated with the quantifiers *allemaal* or *allebei*.

(12) a. De familie is (*allemaal) naar huis gegaan. Ze waren het zat op het eiland.
*the family is (all) to home gone. they were it enough on the island*
'The family have (all) gone home. They were fed up with the island.'

b. Het stel is (*allebei) naar huis gegaan. Ze waren het zat op het eiland.
*the couple is (both) to home gone. they were it enough on the island*
'The couple have (both) gone home. They were fed up with the island.'

The fact that these plural floating quantifiers can be present in (9a) therefore indicates that *u* contains a [PL] feature in syntax if given a plural interpretation.

We now turn to the phonological realization of agreement endings. We will assume, without further discussion, that the syntactic φ-feature specification of an agreeing verb is the same as that of its subject (see Ackema & Neeleman 2010 for some qualifications not relevant here). The general spell-out rules for agreement endings in Dutch are given in (13).

(13) a. $[_{\varphi}$ PAR] $\Leftrightarrow$ Ø / V-[ __ ]
b. $[_{\varphi}$ PAR ADD] $\Leftrightarrow$ t / V-[ __ ]
c. $[_{\varphi}$ ] $\Leftrightarrow$ t / V-[ __ ]
d. $[_{\varphi}$ PL] $\Leftrightarrow$ en / V-[ __ ]

As in the case of pronouns, selection of a spell-out rule for a given feature bundle is subject to the Elsewhere Principle. Therefore, an agreement ending specified as $[_{\varphi}$ ADD PAR] will trigger the rule in (13b), rather than that in (13a). This is enough to generate the singular part of the regular agreement paradigm, which we illustrate with the verb *werken* 'work' in (14), as well as the third person plural. Notice that there is no spell-out rule that mentions [HON], and indeed the agreement triggered by the polite form of the second person pronoun is identical to that triggered by the familiar form. (There is a difference in behaviour under inversion, as well as with the verb *hebben* 'have', as already noted. We will come back to this below).

(14)

| | ***werken*** |
|---|---|
| **1sg** | Ik werk |
| **2sg** | Jij werk**t** |
| **2sg hon** | U werk**t** |
| **3sg** | Hij werk**t** |
| **1/2/3pl** | Wij/jullie/zij werk**en** |

In the first and second person plural, the rules in (13) underdetermine the realization of the verbal agreement ending. Consider a verb specified as [$_{\varphi}$ PAR PL] (first person plural). In principle, either rule (13a) or rule (13d) could be applied to this input. Since the domains of application of these rules do not stand in a subset-superset relation, the Elsewhere Principle does not favour either of these rules. We might therefore expect optionality in the realization of first person plural verbs, contrary to fact. The fact that all plural verbs carry the same ending *-en* can be captured by assuming two further rules of impoverishment, which delete [ADD] and [PAR] in the context of [PL]:

(15) a. [ADD] → Ø / V-[$_{\varphi}$ __ PL]
b. [PAR] → Ø / V-[$_{\varphi}$ __ PL]

One might think that the rule in (15b) might suffice to capture the neutralization of person distinctions in the plural, under the assumption that if a feature is deleted all features dependent on it according to the geometry in (5) are deleted as well. However, there is reason to believe that such 'accidental' deletion of dependent features is banned:

(16) *No accidental deletion*
A feature may not be deleted solely as the result of deletion of a feature on which it is dependent.

This assumption is necessary, among other things, to account for the agreement paradigm in an older version of standard Dutch. In this agreement paradigm, which began to disappear at the end of the nineteenth century, the second person plural still had a distinct ending, as opposed to the first (and third) person plural (see Buitenrust Hettema 1891 and Aalberse 2009):

(17)

| | ***werken*** |
|---|---|
| **1sg** | Ik werk |
| **2sg** | Jij werk**t** |
| **2sg hon** | U werk**t** |
| **3sg** | Hij werk**t** |
| **1pl** | Wij werk**en** |
| **2pl** | Jullie werk**t** |
| **3pl** | Zij werk**en** |

This older version of Dutch apparently had the rule in (15b), but not the one in (15a). If dependent features could be accidentally deleted, however, we would still expect the second person plural to surface as *-en*, as [ADD] would be deleted when [PAR] is deleted.

(Note that it is not possible to apply (15b) and delete [PAR] while leaving [ADD] unaffected, as this would result in an ill-formed feature geometry.) Thus, (16) can block the application of impoverishment rules.[1]

The principle in (16) also illuminates an apparent complication with the agreement form that accompanies polite plural pronouns in modern Dutch. As shown above, *u* never triggers the plural *-en* ending, but rather occurs with singular *-t*. Given the evidence that, on a plural interpretation, *u* is syntactically specified as [PL], the agreeing verb must be as well. We might therefore expect application of either the impoverishment rule in (10), which deletes [PL] in the presence of [HON], or of the rules in (15a,b), which delete [PAR] and [ADD] in the presence of [PL]. But that would incorrectly predict optionality between the *-t* and *-en* endings. Given (16), however, the application of (15a,b) is blocked in the presence of [HON], as the latter may not be deleted accidentally. Therefore, (10) must apply, resulting in the appearance of singular *-t*.

This concludes our discussion of the 'regular' agreement system. In the next three sections we consider the agreement alternations introduced at the outset of the paper.

## 3. AGREEMENT WEAKENING UNDER INVERSION

As mentioned in section 1, the agreement ending of second-person singular verbs is affected by the order between subject and verb. If the subject precedes the verb, agreement is realized as *-t*; in structures with inversion, the verb does not carry overt agreement:

(18) a. Jij leest het boek.
*you read-2SG the book*
'You are reading the book.'

b. Ik geloof dat jij het boek leest.
*I believe that you the book read-2SG*
'I believe that you are reading the book

c. Lees jij het boek?
*read you the book*
'Are you reading the book?'

In earlier work (Ackema & Neeleman 2004), we have argued that the pattern in (18) can be captured using a particular type of impoverishment rule. Our account is based on the idea that the context for impoverishment can be a phonologically defined local domain, namely the phonological phrase (or φ). We motivated the existence of such PF rules by showing they can account for a variety of phenomena cross-linguistically. Agreement alternations like the one observed in Dutch arise in case the grammar of the language contains a PF rule that states that, if the target and the controller of a particular agreement relation are in the same φ, the feature content of one of them is reduced.

[1] There are two ways to analyse the *-t* ending in the second person plural. This ending could either be inserted by a spell-out rule that mentions the full set of phi-features [PAR ADD PL], or it could be inserted by the same rule that inserts a *–t* ending in the second person singular. In the latter case, we have to adopt a further rule of impoverishment that deletes [PL] in the context of [ADD] (in verbal agreement endings). We adopt the second solution, presenting some arguments as we proceed (see in particular section 6).

The effect of this process depends on the characterisation of prosodic phrases. We rely on independently motivated alignment rules, which state that edges of syntactic phrases must coincide with edges of phonological phrases (compare Selkirk 1984, 1986, McCarthy & Prince 1993, Truckenbrodt 1999). This can either involve left-alignment or right-alignment. In languages that are (predominantly) head-initial syntactically, such as Dutch, there is right-alignment (compare Selkirk 1986, Tokizaki 1999):

(19) Align the right edge of a maximal projection with the right edge of a φ.

Two things must be noted in connection to (19). First, the rule mentions maximal projections, rather than heads. Hence, heads do not trigger φ-closure; only the right boundaries of full phrases do. Second, it is important to realize that this rule determines the initial prosodic structure at PF, that is, *before* spell-out. The final part of the mapping from syntax to phonology consists of the insertion of phonological material. The ultimate prosodic structure in phonology proper depends, of course, on the phonological properties of this inserted material. For example, if an initial φ generated at PF contains too little phonological material to form a well-formed phonological phrase on its own, it will be adjoined to a neighbouring φ to ensure proper weight distribution. The ultimate prosodic phrasing will also depend on factors such as speech rate, pauses, etc. For motivation of such a two-step model of prosodic phrasing (initial domains determined by mapping from syntax at PF, later adjustments in phonology), see Ghini 1993, Monachesi 2005 and Dehé 2006.

The rule in (19) delivers the following initial prosodic structures for the examples in (18), where prosodic phrases are indicated by braces:

(20) a. {Jij} {leest het boek}.
*you read-2SG the book*
'You are reading the book.'
b. {Ik} {geloof dat jij} {het boek} {leest}.
*I believe that you the book read-2SG*
'I believe that you are reading the book.'
c. {Lees jij} {het boek}?
*read you the book*
'Are you reading the book?'

The impoverishment rule responsible for the agreement alternation in Dutch can be formulated as in (21). What it expresses is that the [ADD] feature of an agreeing verb is deleted if that verb occurs in the same prosodic phrase as the DP with which it agrees. (Agreement is indicated here through coindexation of phi-feature bundles. No particular analysis of agreement is implied by this, but see Ackema & Neeleman 2010 for a proposal):

(21) $[\text{ADD}] \rightarrow \emptyset \; / \; \{\text{V-}[_{\varphi} \_\_]_i \; [\text{D } \varphi_i]\}$

Given the prosodic structures in (20), this rule can apply in (20c), but not in (20a,b), as only in (20c) do verb and agreeing subject end up in the same prosodic phrase.

Consequently the verbal agreement ending, whose syntactic specification is [PAR ADD], will be only be specified as [PAR] at the point of spell out. The morphological form of the verb will therefore be homophonous to the first person singular, that is, there will not be an overt ending (see (13a).

In modern standard Dutch, the rule in (21) can only have an effect in the singular, as in the plural the impoverishment rule in (15) obliterates all person distinctions anyway. Recall that in the older version of the standard language mentioned in section 2, the second person plural still had an ending *-t* distinct from the general plural ending *-en* (see (17)). In contexts where the subject appears right-adjacent to the verb, the *-t* ending, was not used; instead the general plural ending *-en* surfaces (see Buitenrust-Hettema 1891, Van Loey 1970, and Aalberse 2009), as predicted by the rule in (21). The phenomenon is illustrated in (22), where both *jullie heb-t* 'you(plural) have-2PL' and *hebb-en jullie* 'have-PL you(plural)' occur in the same sentence.[2]

(22) Jullie hebt het aangevoeld en terecht hebben jullie ...
*you(PL) have-2PL it felt and rightly have-PL you(PL)*
'You have felt it, and you have rightly ...'
(http://www.rkdocumenten.nl/index.php?docid=203)

The account predicts that impoverishment will not take place if certain types of constituents intervene between the agreeing verb and an inverted subject. If an intervening constituent triggers a prosodic boundary aligned with its right edge, then verb and subject will end up in different prosodic domains, even if there is subject-verb inversion. We can illustrate this using the general possibility of fronting a contrastive topic to a position between a fronted verb and the subject. The examples in (23) show that this operation is neither blocked in the context of verbal agreement as such nor in the context of second person singular subjects (note that in the past tense there is no person agreement in Dutch).

(23) a. Volgens mij leest [$_{DP}$ dat soort boeken] zelfs hij $t_{DP}$ niet.
*according.to me reads that kind.of books even he not*
'I think even he does not read that kind of books.'
b. Volgens mij las [$_{DP}$ dat soort boeken] zelfs jij $t_{DP}$ niet.
*according.to me read.PST that kind.of books even you not*
'I think even you did not read that kind of books.'

However, examples in which the form of the verb used depends on the rule in (21) do not allow intervening fronted objects:

[2] The fact that a plural form *-en* surfaces under inversion indicates that at this stage second person verbs with a plural subject were still marked [PL] at the point of spell-out. This means that the impoverishment rule that deletes [PL] in the context of [ADD] (see footnote 1) is ordered after the agreement weakening rule that deletes [ADD] in inversion contexts. As we will see, this is as expected given the nature of these rules (see the discussion surrounding (42) and section 6). In an even older stage of the language, inversion led to complete loss of any marking in the plural (see Aalberse 2009:168), indicating that the agreement weakening rule targeted the entire φ-node, rather than just the [ADD] feature.

(24) a. Volgens mij lees zelfs jij [$_{DP}$ dat soort boeken] niet.
*according.to me read even you that kind.of books not*
'I think even you do not read that kind of books.'
b. *Volgens mij lees [$_{DP}$ dat soort boeken] zelfs jij $t_{DP}$ niet.
*according.to me read that kind.of books even you not*

The initial prosodic structure of (24b), as generated by the alignment rule in (19), is as in (25). Crucially, the right boundary of the fronted object triggers a prosodic boundary that separates verb and subject prior to spell out. As a consequence, the structural description of the rule in (21) is not met, so that it cannot apply in this case.

(25) *{Volgens mij} {lees dat soort boeken} {zelfs jij} {niet}.
*according.to me read that kind.of books even you not*

The predictions that we make for intervening modifiers are more subtle. The position between a fronted agreeing verb and a following subject is one that can host a variety of modifying phrases. For our current purposes it is important to distinguish modifiers that consist of a single maximal projection, like *vanavond* 'tonight', and more complex modifiers like *op de laatste avond van het jaar* 'on the last day of the year'. We have argued elsewhere that prosodic boundaries between a modifier and the material it modifies are erased if induced only by the right edge of the modifier (see Ackema & Neeleman 2004:187, 271). An example like (26a) therefore has the initial prosodic structure in (26b).

(26) a. Volgens mij gaat [$_{AdvP}$ vanavond] zelfs hij naar het café.
*according.to me goes tonight even he to the pub*
'I think even he will go to the pub tonight.'
b. {Volgens mij} {gaat vanavond zelfs hij} {naar het café}.
*according.to me goes tonight even he to the pub*

However, if a modifier consists of more than a single extended projection, the relevant prosodic boundary will not be erased. This is because the φ-boundary in question is supported not only by the right edge of the modifier as a whole, but also by the right edge of the extended projections embedded in it. The latter do not modify IP. Consequently, the example in (27) is assigned a more articulated prosodic structure.

(27) a. Volgens mij gaat [$_{PP}$ op de laatste avond [$_{PP}$ van het jaar]]
*according.to me goes on the last evening of the year*
zelfs hij naar het café.
*even he to the pub*
'I think even he will go to the pub on the last evening of the year.'
b. {Volgens mij} {gaat op de laatste avond van het jaar}
*according.to me goes on the last evening of the year*
{zelfs hij} {naar het café}.
*even he to the pub*

Hence, the prediction is that a modifier consisting of a single maximal projection can intervene between a verb form with reduced agreement and a second person singular subject, while a complex modifier cannot. This is in line with the observation by Zonneveld (2007) that examples of the type in (28a) are fully grammatical. In constrast, examples with complex modifiers in the same position are unacceptable (see Ackema & Neeleman 2004:196):[3]

(28) a. {Volgens mij} {ga vanavond zelfs jij} {naar het café}.
*according.to me go tonight even you to the pub*
'I think even you will go to the pub tonight.'
b. *{Volgens mij} {ga op de laatste avond van het jaar}
*according.to me go on the last evening of the year*
{zelfs jij} {naar het café}.
*even you to the pub*

In contexts where the rule in (21) cannot apply, we would expect that the regular agreement ending for a second person singular verb would surface. However, although it is true that examples like (29) are better than those in which agreement weakening has taken place, they are in fact still marginal.

(29) ?{Volgens mij} {gaat op de laatste avond van het jaar} {zelfs jij} {naar het café}.
*according.to me go*-2sg *on the last evening of the year even you to the pub*
'I think even you will go to the pub on the last evening of the year.'

The same is true of examples involving fronted objects:

(30) ?Volgens mij leest [$_{DP}$ dat soort boeken] zelfs jij $t_{DP}$ niet.
*according.to me read that kind.of books even you not*
'I think even you do not read that kind of books.'

We speculate that the marginality of these examples is due to a parsing difficulty rather than to a principle of the grammar. Examples with a fronted constituent between verb and inverted subject are relatively infrequent. This means that the presence of a *-t* ending on a verb in structures with subject-verb inversion is a statistically highly reliable indication that a third person subject will follow, rather than a second person subject. (Recall that, if there is no intervening material between verb and inverted subject, only third person singular subjects induce a *-t* ending on the verb). In general, it pays off in parsing to create predictive shortcuts. Hence, we speculate that if a speaker of Dutch encounters the string in (31), where XP is not the subject, he or she will expect a third person singular subject, with the consequence that the continuation in (29) creates a garden path effect.

[3] Zonneveld (2007) accepts intervention of modifiers like *op zondag* 'on Sunday' as well. We are not sure of this judgment, but for us intervention by *op elke zondag* 'on every Sunday' is impossible. One option is that bare nominal complements of prepositions behave like heads rather than maximal projections with respect to the alignment rule in (19). But of course it may also be that speakers differ in the extent to which they permit PF restructuring of complex adverbials.

(31) XP V-*t* ...

We may note that the effect gets weaker with repetition or if more material intervenes between verb and subject, as expected if it is psycholinguistic in nature. Real mismatches in agreement, as in (32) for instance, are worse than (29) to begin with, and do not improve either with repetition or if the distance between verb and subject is enlarged.

(32) *Volgens mij gaan op de laatse avond van 't jaar zelfs jij naar het café.
*according.to me go-**PL** on the last evening of the year even you.**SG** to the pub*

This concludes our discussion of agreement weakening of regular verbs, with one exception. The examples discussed so far only contain informal second person forms. We turn to polite forms in section 5.

## 4. IRREGULAR AGREEMENT

In the previous sections we have concentrated on inflection of regular verbs. Irregular verbs differ in two respects from the picture that has emerged so far: some of them show allomorphy in their stem forms, and many of them show patterns of inflectional endings that differ from the one observed for regular verbs. On the whole, verbal inflection is more impoverished than in the case of regular verbs, and there appears to be a degree of optionality in forms, in particular in the second person singular, which makes it highly relevant to the agreement alternation under inversion discussed in the previous section. We will show that there are specific impoverishment rules for irregular verbs, but that the agreement alternation under inversion with these verbs simply follows the rule in (21).

We start by discussing the two modal verbs that display stem allomorphy. These are *kunnen* 'can' and *zullen* 'will'. The agreement paradigms for these verbs are given in (33) and (34) (we leave out the polite forms for now):

(33)

| CAN | ***Kan* forms** | ***Kun* forms** |
|---|---|---|
| **1sg** | Ik kan | *Ik kun |
| **2sg** | Jij kan | Jij kun**t** |
| **3sg** | Hij kan | *Hij kun**t** |
| **1/2/3pl** | *Wij/jullie/zij kann**en** | Wij/jullie/zij kunn**en** |

(34)

| WILL | ***Zal* forms** | ***Zul* forms** |
|---|---|---|
| **1sg** | Ik zal | *Ik zul |
| **2sg** | Jij zal | Jij zul**t** |
| **3sg** | Hij zal | *Hij zul**t** |
| **1/2/3pl** | *Wij/jullie/zij zall**en** | Wij/jullie/zij zull**en** |

There are two stem forms in these paradigms: *kan*/*zal* and *kun*/*zul*. The former is obligatorily used in the first and third person singular, whereas the latter is obligatorily used in the plural. Strikingly, the second person singular can use either stem. Moreover, the *kan*/*zal* form never combines with any ending, which means that in the third person

singular the usual ending is omitted, while in the second person singular it only appears when the *kun*/*zul* stem is used.

Our first step in accounting for these paradigms is to assume that Dutch has impoverishment rules that apply specifically to (some) modal verbs. Two of these rules are obligatory: [PAR] is deleted when possible, as stated in (35b), and so are φ-feature clusters in general, as stated in (35c). The immediate result is that in the singular all φ-feature information in first and third person verbs is deleted. There is a third rule that deletes [ADD], given in (35a); in contrast to the other rules, this rule is optional.

(35) a. [ADD] → Ø / Modal-[$_{\varphi}$ __] (optional)
b. [PAR] → Ø / Modal-[$_{\varphi}$ __]
c. φ → Ø / Modal-φ

One might think that the obligatory rule in (35c) has the consequence that modal verbs would never show any agreement at all. Recall, however, that impoverishment rules in general are subject to the condition in (16), which disallows accidental deletion of dependent features. In the case at hand this has two effects. First, (35c) will not apply in the plural, since the [PL] feature is dependent on φ, and hence protected by (16). Second, (35b) will not apply either if (35a) does not apply. This is because [ADD] is dependent on [PAR], which in turn is dependent on φ. Hence, if [ADD] is present, it blocks application of both (35b) and (35c).

The stem allomorphy in (33)/(34) can now be accounted for by assuming that the factor that regulates the distribution of these stem forms is the presence or absence of φ-features. We will encode this using a rule that inserts a diacritic $ to distinguish the two stems (see (36)). The spell-out rules for the two stems can then refer to this diacritic (see (37)).

(36) a. CAN → CAN$ / __-φ
b. WILL → WILL$ / __-φ

(37) a. CAN ⇔ /kan/
b. CAN$ ⇔ /kun/
c. WILL ⇔ /zal/
d. WILL$ ⇔ /zul/

Consider how (35)-(37) account for the paradigms of *kunnen* and *zullen*. The first person loses its φ-features as the result of successive application of (35b) and (35c). This means the stem will be realized by (37a,c), resulting in *ik kan* 'I can' and *ik zal* 'I will'. Similarly, application of (35c) results in loss of φ-features in the third person, so that the same stem allomorph is selected: *hij kan* 'he can' / *hij zal* 'he will'. In the plural, the rules in (15) delete person features, as usual. But application of (35c) is blocked by the presence of the dependent [PL] feature. As φ-features remain, the rules in (36) are triggered and the stem selected will be the *kun*/*zul*-form mentioned in (37b,d). [PL] is spelled out by *-en*, so that we get *kunnen* 'can-PL' and *zullen* 'will-PL' throughout the plural.

What happens in the second person singular depends on whether the optional rule in (35a) applies or not. If it does apply, so will (35b) and (35c), so that we get the same result as in the first and third person singular: a verb form without any φ-features, hence realized by the stem mentioned in (37a,c): *jij kan*/*zal* 'you can/will'. If (35a) does not apply. both (35b) and (35c) are blocked as a result of the ban on accidental deletion. Hence, in this case a fully specified form survives, so that the stems mentioned in (37b,d) are selected and the regular *-t* ending is inserted: *jij kunt*/*zult* 'you can-2SG/will-2SG'.

The second person singular forms that surface under inversion are exactly as predicted by the system presented so far. In particular, there is no need to adjust the impoverishment rule triggered by subject-verb inversion. This rule was introduced in our discussion of regular verbs (see (21)), and contrary to what Zonneveld (2007) suggests it works in exactly the same way with modals: it deletes [ADD] when verb and subject appear in the same initial prosodic phrase.

In case (35a,b,c) have applied, there is of course nothing left to delete, and therefore what we expect to find is the same bare form *kan*/*zal* that is found in the absence of inversion. This option is illustrated in (38).

(38) a. Kan jij dat boek lezen?
*can you that book read*
'Can you read that book?'
b. Zal jij dat boek lezen?
*will you that book read*
'Will you read that book?'

In case (35a) has not applied, so that application of (35b,c) is blocked, the input for the rule in (21) is a form CAN$/WILL$-[$_{\varphi}$ PAR ADD]. The rule in (21) deletes the [ADD] feature when subject and verb are inverted. The result is a feature cluster consisting of [PAR], which is spelled out by the regular ending for this feature cluster, namely zero. The CAN$/WILL$ stem is realized by (37b,d), so that the forms expected under inversion are *kun* and *zul*. This option indeed exists alongside (38):

(39) a. Kun jij dat boek lezen?
*can you that book read*
'Can you read that book?'
b. Zul jij dat boek lezen?
*will you that book read*
'Will you read that book?'

This analysis presupposes a particular ordering of rules. The impoverishment rules deleting φ-features in modals, given in (35), apply first, followed by the stem allomorphy rules in (36). These are in turn followed by the impoverishment rule in (21), which operates in prosodic domains. The last rules to apply are spell-out rules, such as those in (7), (13) and (37). That this yields corrects results is demonstrated by the sample derivations for *kan jij* 'can you' and *kun jij* 'can you' in (40) and (41), respectively.

(40)

| | |
|---|---|
| CAN-[$_{\varphi}$ PAR ADD] | |
| CAN-[$_{\varphi}$ PAR] | (35a) applies |
| CAN-[$_{\varphi}$] | by (35b) |
| CAN | by (35c) |
| CAN | (36a) is not applicable |
| {CAN [$_{DP}$ [$_{\varphi}$ PAR ADD]]} | (21) is not applicable |
| /kan/ /jij/ | by (37a) and (7b) |

(41)

| | |
|---|---|
| CAN-[$_{\varphi}$ PAR ADD] | |
| CAN-[$_{\varphi}$ PAR ADD] | (35a) is not applied |
| CAN-[$_{\varphi}$ PAR ADD] | (35b) is blocked by (16) |
| CAN-[$_{\varphi}$ PAR ADD] | (35c) is blocked by (16) |
| CAN$-[$_{\varphi}$ PAR ADD] | by (36a) |
| {CAN$-[$_{\varphi}$ PAR ADD] [$_{DP}$ [$_{\varphi}$ PAR ADD]]} | |
| {CAN$-[$_{\varphi}$ PAR] [$_{DP}$ [$_{\varphi}$ PAR ADD]]} | by (21) |
| /kun/ /jij/ | by (37b), (13a) and (7b). |

Arguably, the necessary rule ordering need not be stipulated, but can be derived from the nature of the rules involved. That spell-out rules operate last, after any rules manipulating φ-features, follows in any model separating syntax and phonology. In such models, spell-out rules map a feature bundle to a phonological form. The idea is that any subsequent rule is phonological in nature, leaving no room for further morpho-syntactic feature manipulation. We assume that, within the system that manipulates morpho-syntactic features, rule ordering is governed by the generality of the rules involved, with less general rules preceding more general rules.

One can determine how general a rule is by asking two questions. First, does the rule apply to all tokens of agreeing verbs? If the answer is positive, we are dealing with the most general type of rule. Examples are rules that implement feature co-occurrence restrictions in a language, such as the ones in (15) (which prevent co-occurrence of person and number features). If the rule does not apply to all tokens of agreeing verbs, the next question is whether it applies to all such tokens in a particular context. If the answer to this is positive, as in the case of the agreement weakening rule that applies in prosodic domains, we are dealing with the next most general type of rule. If the answer to this second question is also negative, we are dealing with the least general type of rule. This final class includes optional rules and rules that apply to specific lexical items (such as certain modal rules). The resulting rule order is given below:

(42)
a. Optional and item-specific impoverishment rules; stem selection rules (i.e. (35) and (36))
b. Agreement weakening in prosodic domains (i.e. (21))
c. Impoverishment rules that implement feature co-occurrence restrictions (like those in (15))
d. Spell-out rules (like those in (7), (13) and (37))

This correctly captures the crucial part of the ordering in (40) and (41) (stem selection precedes agreement weakening). Admittedly, the order between the impoverishment rules for modals and the stem selection rules does not seem to be intrinsic (hence we have placed them together in (42a)). In fact we can assume that there is no fixed order between them, and that a language could in principle select either order. However, if the stem selection rules would apply before the impoverishment rules, these selection rules could not be acquired at all, because they would not have any surface effect (at the time of stem selection, φ-features would always be present, and hence the stem would always be marked with the $-diacritic). In other words, in any language that has stem alternations of the relevant type, the rule ordering is such that stem selection is ordered after impoverishment for specific verbs.

The data discussed in this section cannot be used to empirically test the ordering of the agreement weakening rule in (21) and more general impoverishment rules like (15). However, the ordering given in (42b,c) matches the data in older stages of Dutch, as we will discuss in section 6.

The patterns found with *kunnen* and *zullen* are the most complicated among the modals. One other modal, *willen* 'want' behaves exactly like *kunnen* and *zullen*, except that it does not display any stem allomorphy. The paradigm is therefore as below, and the analysis works as for *kunnen* and *zullen*, without the complication of stem selection:

(43)

| WANT | **Willen** | |
|---|---|---|
| **1sg** | Ik wil | |
| **2sg** | Jij wil/wil**t** | Wil jij |
| **3sg** | Hij wil | |
| **1/2/3pl** | Wij/jullie/zij will**en** | |

A fourth modal, *mogen* 'may' is like *kunnen* and *zullen* in that it does show stem allomorphy. However, in the modern standard language at least, the rule in (35a) applies obligatorily rather than optionally to *mogen*, with the result that the second person singular, like the first and third person singular, consistently surfaces as a bare stem. (In older versions of the language and in some dialects, (35a) is still optional for this verb, resulting in an additional form *moogt* 'may-2SG'.)

(44)

| MAY | ***Mag* forms** | ***Mog* forms**[4] |
|---|---|---|
| **1sg** | Ik mag | *Ik moog |
| **2sg** | Jij mag | *Jij moog**t** |
| **3sg** | Hij mag | *Hij moog**t** |
| **1/2/3pl** | *Wij/jullie/zij magg**en** | Wij/jullie/zij mog**en** |

All other verbs usually classified as modals (see, for instance, Van Bart, Kerstens & Sturm 1998:51) behave like regular verbs.

There are two further verbs that have an irregular agreement paradigm: *hebben* 'have' and *zijn* 'be'. The former has two stem forms whose distribution depends on the

[4] The alternation between *mog* and *moog* does not indicate a difference in the quality of the vowel, but is one of the vagaries of Dutch orthography: long vowels are written twice in closed syllables.

presence of any dependent feature on the φ-node. In other words, one stem form only appears in the third person singular, while the other appears everywhere else. The paradigm and the rules relevant for the stem alternation are given below:

(45)

| HAVE | ***Heb* forms** | ***Heef* forms** |
|---|---|---|
| **1sg** | Ik heb | *Ik heef |
| **2sg** | Jij heb**t** | *Jij heef**t** |
| **3sg** | *Hij heb**t** | Hij heef**t** |
| **1/2/3pl** | Wij/jullie/zij hebb**en** | *Wij/jullie/zij hev**en** |

(46) HAVE → HAVE$ / __-[$_{\varphi}$ α], where α ∈ {PAR, ADD, PL}

(47) a. HAVE ⇔ /heef/
b. HAVE$ ⇔ /heb/

The second person singular undergoes the agreement weakening rule in (21) in the usual way when there is subject-verb inversion, resulting in *heb jij* 'have.1SG you' (instead of **hebt jij* 'have-2SG you').

The verb *zijn* 'be' has a more complicated paradigm, which we give in (48).

(48)

| BE | **Zijn** |
|---|---|
| **1sg** | Ik ben |
| **2sg** | Jij ben**t** |
| **3sg** | Hij is |
| **1/2/3pl** | Wij/jullie/zij zijn |

There is one regularity in the paradigm, namely that the second person singular form equals the first person singular form plus a *-t* ending. Moreover, this ending disappears under subject-verb inversion (it is *ben jij* 'are.1SG you', rather than **bent jij* 'are-2SG you'). Other than that, the forms in the finite paradigm cannot be analyzed as consisting of the same stem plus an affix. The third person singular is clearly suppletive. Possibly the same is true, in current-day Dutch, for the plural form. If it were composed of a stem *zij* plus a plural ending *-en*, the phonological rules of Dutch would yield a surface form [zɛijən], rather than the actual [zɛin], on a par with a verb like *brei-en* 'to knit', which is realised as [brɛijən] rather than [brɛin].

The rules we propose to capture the various forms of the verb *zijn* 'be' are given below:

(49) BE → BE$ / __-[$_{\varphi}$ α], where α ∈ {PAR, ADD}

(50) a. BE$ ⇔ /ben/
b. BE+PL ⇔ /zijn/
c. BE+φ ⇔ /is/

Most of this is straightforward, but it may be unclear why we use a stem allomorphy rule to regulate the distribution of the stem *ben*, rather than take this form to be the basic form of the stem BE. The reason for this is that there is further stem form *wees*, used in the

imperative and in some non-finite forms. There is reason to believe that this is the basic stem form, but we cannot explore this matter here.

The main conclusion from this section is that there is no need to adjust the agreement weakening rule in (21) in order to capture the behaviour of irregular verbs under inversion. The rule operates in the same way for all verbs. The main difference between regular verbs and irregular verbs is that the latter can be subject to particular impoverishment and stem allomorphy rules that precede application of (21).

There are complications with the polite second person forms that we discuss in the next section. We will argue that even these data do not require an adjustment of the rule in (21).

## 5. POLITE FORMS

As mentioned in the introduction, the agreement forms found with second person polite pronouns alternate between the expected second person singular and the third person singular. It is easiest to demonstrate this with the irregular verbs *hebben* 'have' and *zijn* 'be'. In fact, this alternation is not only found with verbal agreement but also with anaphors, which alternate between *u*(*zelf*), the second person polite form, and *zich*(*zelf*), which is the third person form. Both alternations are illustrated in (51).

(51) a. U hebt u waarschijnlijk vergist.
*You.HON have-2SG 2SG.REFL.HON probably erred*
'You are probably in error.'

b. U hebt zich waarschijnlijk vergist.
*You.HON have-2SG 3SG.REFL.HON probably erred*

c. U heeft u waarschijnlijk vergist.
*You.HON have-3SG 2SG.REFL.HON probably erred*

d. U heeft zich waarschijnlijk vergist.
*You.HON have-3SG 3SG.REFL.HON probably erred*

Although there is some prescriptive pressure to be consistent in choosing either a second person form for both agreeing verb and anaphor or a third person form for both, all combinations in (51) are in fact grammatical and attested (as a simple Google search confirms). This means that the account of these data cannot be that the pronoun *u* is ambiguous between a second and third person specification. If this were the case, the 'mixed' examples in (51b,c) could not be generated. Rather we must be dealing, once more, with an optional impoverishment rule that operates after agreement has been established, and that reduces the feature content of the agreement ending and the anaphor before spell-out. Given that such impoverishment rules cannot take into account whether or not other elements have undergone similar impoverishment, the mixed patterns in (51b,c) are to be expected.

The impoverishment rule in question can be formulated as in (52).

(52) $[_{\varphi}$ PAR ADD HON (PL)$] \rightarrow [_{\varphi}\ ]$ (optional)

The first thing to note about this rule is that, like other optional impoverishment rules, it must apply before the rules that determine stem choice (see the discussion below (42)). Otherwise, the deletion of the various φ-features would not trigger use of the *heef* stem. We give the derivations of *u hebt* and *u heeft* below.

(53) HAVE-[$_{\varphi}$ PAR ADD HON]
HAVE-[$_{\varphi}$ PAR ADD HON] (52) is not applied
HAVE$-[$_{\varphi}$ PAR ADD HON] by (46)
[$_{DP}$ [$_{\varphi}$ PAR ADD HON]] HAVE$-[$_{\varphi}$ PAR ADD HON]
/u/ /heb-t/ by (11), (47b) and (13b)

(54) HAVE-[$_{\varphi}$ PAR ADD HON]
HAVE-[$_{\varphi}$] (52) is applied
HAVE-[$_{\varphi}$] (46) does not apply
[$_{DP}$ [$_{\varphi}$ PAR ADD HON]] HAVE-[$_{\varphi}$]
/u/ /heef-t/ by (11), (47a) and (13c)

As noted, the rule in (52) applies to agreement endings and reflexives. Interestingly, it cannot apply to (non-reflexive) pronouns. If it did, we would expect polite forms to surface optionally as third person pronouns, something that is impossible:

(55) *Hij hebt u waarschijnlijk vergist.
*He have-2SG 2SG.REFL.HON probably erred*
'You are probably in error.'

Rather than adjusting the rule to block its application in (55), we propose that there is a general principle that rules out partial impoverishment in pronouns:

(56) *Protected pronouns*
No rule of feature deletion may target a proper subset of φ-features in a pronoun.

The notion of pronoun used in (56) is meant to stand in opposition to reflexive expressions, much as in 'classical' binding theory. The latter do permit partial impoverishment, as (51b,d) shows. That there is a general ban on partial feature deletion in pronouns is motivated by an observation made in Ackema and Neeleman 2004. Cross-linguistically, there are several examples of agreement weakening of the type in (20). These target different features. For example, modern standard Arabic shows reduction of the [PL] feature in the verb under inversion, which is arguably the result of a rule similar to the one motivated for Dutch.[5]

In contrast, this type of rule never seems to target a subset of features in the agreeing pronoun. For example, there is no dialect of Dutch in which the second person singular pronoun surfaces as a first person pronoun under inversion, and there is no dialect of Arabic in which a plural pronoun is realised as a singular pronoun if it follows the verb. To the best of our knowledge, this asymmetry is universal. It cannot be that

[5] This analysis of standard Arabic agreement weakening has been criticized by Benmamoun and Lorimor (2006). See Ackema and Neeleman, to appear, for a reply.

context-sensitive impoverishment rules are blocked from applying to pronouns in general, as certain instances of pro-drop are arguably the result of a rule of this type deleting the entire φ-content of the pronoun (leaving no features to be spelled out). These are instances of pro drop where a subject can only be omitted if it immediately follows an agreeing verb, in other words in exactly the same context as mentioned by the rule in (21) (see Ackema and Neeleman 2004:222-229). It is even possible that a language has both prosodically conditioned impoverishment rules like (21) for verbs and prosodically conditioned pro-drop (Standard Arabic is a case in point). But what is impossible, even there, is partial impoverishment of pronouns.

In Ackema and Neeleman 2004:230-231, we suggest that (56) has a functional background. The idea is that the primary clue the parser uses to determine the reference of an argument is the overt form of that argument, if present. Partial impoverishment results in an overt form that triggers an incorrect referent (say a first person pronoun where the referent is the addressee). Deletion of all φ-features leads to pro-drop, which means that there is no misleading clue. Instead, the listener must use either the agreement on the verb or the discourse context to determine the reference of the argument.[6]

We now turn to the behaviour of polite forms in sentences with subject-verb inversion. The prediction is that such forms should never show agreement weakening. Consider why. Given the optionality of the impoverishment rule in (52), there are two derivations to look at. If the rule applies, there is nothing left for the agreement weakening rule in (21) to delete. Hence, the verb will surface in its third person form, irrespective of word order. If the rule does not apply, the verb carries a [ADD] feature that could in principle be targeted by the rule in (21). However, given the ban on accidental deletion, application of (21) is blocked by the presence of the [HON] feature. (Note that the rule in (52) is not blocked by the ban on accidental deletion, because it mentions the [HON] feature as part of its structural description.) Hence, in this case the verb will surface in its second person form, irrespective of word order.

The prediction for regular verbs is that, whether there is inversion or not, the verb surfaces as a stem suffixed by *-t*, since *-t* is the proper ending for both third and second person verbs. This is correct:

(57) a. U leest het boek.
*you.HON read-2SG the book*
'You are reading the book.'

[6] This explanation may extend to an observation by Bennis (2006): polite reflexives behave like protected pronouns in case their antecedent is not spelled out. The idea would be that in such a situation, the hearer relies on the reflexive to recover the subject's features (including [HON]). Bennis discusses imperatives (see (ia)), but the same effect can be observed if the antecedent of a polite reflexive has undergone topic drop (see (ib,c)). This indicates that an explanation should not be based on properties of the imperative.

(i) a. Vergis *pro* u/*zich niet!
*make-mistake you.PL/REFL not*
Do not make a mistake (polite)!
b. U hebt u/zich een beetje vergist, hè?
*You.PL have.2SG u.PL/REFL a bit made-mistake, TAG*
You have made a slight mistake, haven't you (polite)
c. Hebt u/*zich een beetje vergist, hè?
*have.2SG u.PL/REFL a bit made-mistake, TAG*

b. Leest/*lees u het boek?
*read-2SG/read you the book*
'Are you reading the book?'

The prediction for irregular verbs is that we will see two options under inversion. The verb either surfaces with its third person stem or with its second person stem, but the agreement ending in both instances will be the same as in the non-inverted order, as illustrated below. (Recall that some modals are subject to their own impoverishment rules, which results in omission of the third person *-t*.)

(58) a. U hebt het boek gelezen.
*you.HON have-2SG the book read*
'You have read the book.'
b. Hebt/*heb u het boek gelezen?
*have-2SG/have you the book read*
'Have you read the book?'

(59) a. U heeft het boek gelezen.
*you.HON have-3SG the book read*
'You have read the book.'
b. Heeft/*heef u het boek gelezen?
*have-3SG/have you the book read*
'Have you read the book?'

(60) a. U kunt het boek lezen.
*you.HON can-2SG the book read*
'You can read the book.'
b. Kunt/*kun u het boek lezen?
*can-2SG/can you the book read*
'Can you read the book?'

(61) a. U kan het boek lezen.
*you.HON can the book read*
'You can read the book.'
b. Kan u het boek lezen?
*can you the book read*
'Can you read the book?'

In sum, the agreement patterns found with polite pronouns are entirely as predicted by the various assumptions we have made already in previous sections, once the impoverishment rule in (52) has been introduced.

## 6. [ADD] VS [SP]

In the above we have assumed, without much discussion, that first and second person are characterized by the feature bundles [PAR] and [PAR ADD], respectively. However, there is

a potential alternative view, according to which first person, rather than second person, is the more marked form. On this view, first person is specified as [PAR SP] (SP stands for a dependent feature 'speaker'), while second person carries the single feature [PAR].

We do not want to claim that no language has a [SP] feature. In fact, Harley and Ritter (2002) argue that languages that have inclusive and exclusive forms of the first person plural must have both [SP] and [ADD] in their feature geometry. However, we do think there is a strong case for the geometry in (5) for Dutch, rather than one that employs a [SP] feature to distinguish first from second person forms.

Our first argument comes from the agreement alternation central to this paper, namely the omission of the second person *-t* ending under subject-verb inversion. We analysed this omission as the result of an impoverishment rule targeting the [ADD] feature (see (62a)). There are a few alternatives that could be explored in a system using a [SP] feature. The first is that the rule inserts this feature when verb and second person subject appear in the relevant configuration, as stated in (62b). The second is that there is impoverishment, but that the rule in question, given in (62c), targets the complete φ-node, resulting in spell-out of only the stem. Note that the impoverishment rule cannot target only the feature [PAR], leaving the φ-node in place, since this would incorrectly predict that a third person form will surface.

(62) a. $[\text{ADD}] \rightarrow \emptyset \; / \; \{\text{V-}[_{\varphi} \_\_]_i \; [\text{D } \varphi_i]\}$
b. $[\text{PAR}] \rightarrow [\text{PAR SP}] \; / \; \{\text{V-}[_{\varphi} \_\_]_i \; [\text{D } \varphi_i]\}$
c. $[_{\varphi} \text{ PAR}] \rightarrow \emptyset \; / \; \{\text{V-}\_\__i \; [\text{D } \varphi_i]\}$

The rule in (62b) faces at least two problems. Deletion of features in the context of local identical features is a well-known grammatical phenomenon, conforming to recoverability and related to OCP-type data. Insertion of φ-features is at best rare, and certainly requires very strong motivation (Harbour 2003 is the only paper that we are aware of that argues in favour of a rule of feature insertion). We see no such motivation in the case of (62b). In addition, it is difficult to think of a general principle that would block application of (62b) when the inverted subject is a polite form. In contrast, the ban on accidental deletion, which blocks application of (62a) when the second person form is marked as polite, is an independently motivated restriction on φ-feature deletion.

The rule in (62c) does not run into either of these difficulties, as it is an impoverishment rule (and [HON] might be seen as dependent on [PAR], so that its presence blocks impoverishment of [PAR] as a result of the ban on accidental deletion). However, the existence of versions of Dutch in which the agreement alternation can be observed in the plural (see (22)) shows that (62c) cannot be the right rule. The problem is that the form found under inversion is identical to the first/third person plural form, rather than to the verb's stem. This means that the [PL] feature must survive the impoverishment rule, but given that [PL] is dependent on φ, this fact is not captured by the rule in (62c). (Note that if the presence of [PL] blocked application of (62c) because of the ban on accidental deletion, we would not expect agreement weakening in the plural to begin with.)

In sum, a geometry with a dependent [SP] feature, rather than [ADD], has problems capturing the agreement alternation observed under inversion.

Our second argument is based on syncretisms found in Dutch dialects (see Bennis & MacLean 2007, Aalberse 2007 and Aalberse & Don 2010). The clearest pattern is

found in the plural. Many dialects behave like the standard in that all person distinctions are obliterated in the plural, as a result of the rules in (15). However, the vast majority of dialects that do maintain some person distinctions in the plural have a distinct second person ending (usually *–t*), which is identical to the second person singular ending, while first and third person are marked by the general plural ending *-en*. Aalberse (2007:138) identifies 66 dialects that have person distinctions in the plural, out of which 65 have the paradigm just described. There is a straightforward account for this given our analysis. All dialects avoid feature clusters [PAR ADD PL], possibly because of their complexity. In the standard language, this is achieved through the impoverishment rule in (15a), but some dialects instead have a rule that is the mirror image of (15a), namely the one in (63a). In such dialects, the [PAR] feature is deleted in the first person plural, by (15b), repeated as (63b) below. This gives rise to a feature specification identical to that of the third person plural (namely [PL]). In the second person plural, however, (63b) cannot apply, as its application would violate the ban on accidental deletion. Instead, the rule in (63a) applies, resulting in a feature bundle [PAR ADD], which triggers insertion of a second person singular form (*-t*).[7]

(63) a. [PL] → Ø / V-[$_{\varphi}$ __ ADD]
b. [PAR] → Ø / V-[$_{\varphi}$ __ PL] (=15b)

We do not see how this pattern can be captured insightfully in a system employing a [SP] feature to distinguish first and second person. It is well known that syncretism with respect to one type of paradigmatic dimension typically happens in the context of a marked value on a second paradigmatic dimension. Thus, if person distinctions are suppressed in varieties of Dutch, this happens in the plural and/or in the past tense (as also emphasized in Aalberse & Don 2010). In a system using privative features, the generalization is that languages tend to avoid 'marked marked forms'. The variation between (15a) and (63a) is not surprising, as the two rules achieve the same thing: they both prevent co-occurrence of [ADD] and [PL] at the point of spell-out. In a system using a [SP] feature, we would expect impoverishment rules to conspire to avoid a [PAR SP PL] combination, so that the first person plural would be spelled out either as a general plural form (as in the standard language) or as a first person singular form (if impoverishment targets the [PL] feature instead). This is not the attested pattern. That pattern *can* be captured by the rules below, but the ones in (65) appear to be ad hoc.[8]

(64) *Standard language*
a. [SP] → Ø / V-[$_{\varphi}$ __ PL]
b. [PAR] → Ø / V-[$_{\varphi}$ __ PL]

[7] Note that, by (42), the rule in (63a) must be ordered *after* the agreement weakening rule in (21). This means that where the agreement weakening rule applies, the context for the rule in (63a) is destroyed. As a consequence, agreement weakening in the plural will give rise to a feature specification [PAR PL], which after application of (63b) is reduced to [PL], leading to insertion of the general plural ending *-en*. As mentioned in section 3, this is the correct result. (However, see the qualification in footnote 2.)

[8] Note that the rules in (65) would have to be ordered, with (65a) preceding (65b). Otherwise the plural marking *-en* for the first person would be omitted as well through overapplication of (65b).

(65) *Dialects in which 2PL = 2SG*

a. [PAR SP] → Ø / V-[φ __ PL]

b. [PL] → Ø / V-[φ __ PAR]

The situation in the singular is more complex. In particular, it is a potential problem for our analysis that in a great many dialects, as well as in the standard language, second and third person have identical endings, distinct from the ending that marks first person singular. After all, according to the geometry in (5), there is no feature that second and third person singular share. We therefore must analyse the syncretism as a case of accidental homophony. The pervasive nature of the pattern may seem to favour theories using a [SP] feature, as the relevant paradigms could then be analyzed as having an elsewhere form used in the absence of [SP].

However, there are good reasons to believe that we are indeed dealing with two distinct endings that happen to have the same form. First, as we have discussed at length, second and third person behave differently with respect to the phenomenon of agreement weakening under inversion. In dialects that have such a rule, it specifically targets the second person only, leaving third person endings unaffected. This cannot be explained if the second person ending is one and the same as the third person ending. Second, there is in fact a historical explanation for the accidental identity of the two endings. The second person singular ending originated as the distinct second person plural *-t* ending mentioned above (by chance identical in form to the third person singular). The second person plural had been in use as a polite form with either a singular or plural interpretation from at least the 13th century and started to be used as a general second person form in the singular, leading to the complete replacement of the earlier familiar form in the 16th century (see Aalberse 2009, who refers to Vor der Hake 1908).[9]

If we put to one side the dialects in which second and third person singular are both (accidentally) marked by *-t*, what remains are three dialects in which there is syncretism between these persons. Two of these arguably had the *-t* ending as well, but lost it as a result of a general process of deletion of word-final *t* (see Aalberse 2007). The remaining dialect has an opposition between *-e* in the first person and *-en* in the second and third person. Aalberse describes the latter ending as puzzling and we have nothing to add to this.

In effect, then, according to the statistical data in Aalberse 2007, there is exactly *one* dialect that displays a syncretism of second and third person singular which is not the result of a historical accident. This figure stands in opposition to 17 dialects in which first and second person have the same form (contrasting with the third person), and 22 dialects in which this is true of first and third person singular (with a distinct second person ending). Of course, the last two syncretisms are in line with our proposal. A syncretism between first and second person requires a spell-out rule that refers to [PAR] (but not [ADD]), plus an elsewhere form; a syncretism between first and third person requires a spell-out rule that refers to [PAR ADD], plus an elsewhere form.

[9] Aalberse (2009) explains why this change happened in Dutch, but not in French for example, using the features [±SP] [±PAR]. We cannot discuss this proposal here, but see Ackema 2011 for some comments that imply that the explanation of the change need not rely on a [SP] feature as such, but rather on the influence of adult L2 learners of 16th/17th century Dutch avoiding impolite second person forms.

We finally turn from verbal agreement to the Dutch pronominal system. The simplest argument in favour a system based on [ADD] rather than [SP] comes from the interpretation of plural pronouns. The pronoun used to refer to a group of individuals containing the speaker must be first person plural, irrespective of whether the group also contains the addressee (see (66a)). The second person plural can only be used to refer to a group of individuals that includes one or more addressees, but not the speaker (see (66b)). Use of a third person plural pronoun is only possible if the group referred to excludes both speaker and addressee. This appears to be a widespread pattern, possibly universal (see Zwicky 1977).

(66) a. Jij en ik zijn voor vandaag uitgewerkt. We/*jullie gaan nu naar huis.
*you and I are for today out-worked. We/you.PL go-PL now to home.*
'You and I are done for today. We/you will now go home.'

b. Jij en Piet zijn voor vandaag uitgewerkt. Jullie/*we gaan nu naar huis.
*you and Pete are for today out-worked. You.PL /we go-PL now to home.*
'You and I are done for today. We/you will now go home.'

This pattern can be accounted for using the feature geometry adopted in (5). As explained, the Elsewhere Principle forces the use of the most specific form compatible with the intended reference. If the group referred to contains addressees, but not the speaker, it is possible to use a [PAR ADD PL] pronoun (spelled out as *jullie* in Dutch). This form triggers an interpretation such that all participants in the group referred to are addressees (because in the proposed geometry [ADD] is dependent on PAR]). The group may also contain non-participants (because [PL] is not dependent on [PAR]). Given that this feature geometry triggers this interpretation, it cannot be used when the group referred to includes the speaker. Instead, the less specified [PAR PL] pronoun must be used (which simply indicates that one or more members of the group are participants). This pronoun is realized as *wij*/*we* 'we' in Dutch. The same pronoun is also used when the speaker happens to be the only participant in the group referred to. Finally, if the group does not contain any participant, a pronoun specified only as [PL] is used (spelled out as *zij*/*ze*).

This pattern cannot be captured by having [SP] rather than [ADD] as the feature dependent on [PAR]. The reason is that this would predict that the first person plural pronoun (specified as [PAR SP PL]) can only be used to refer to groups in which all participants are speakers, while the less specified second person plural pronoun (consisting of [PAR PL]) must be used when the group contains both the speaker and one or more addressees. This is obviously wrong.

One might expect that parallel arguments could be set up for singular pronouns. However, there are some confounds that in fact make this impossible. When singular pronouns are used referentially, it is sometimes possible to use an underspecified form. For example, in Dutch a masculine pronoun can be used to refer to an individual whose gender is unknown (where many speakers of English would use *they*). This follows if the masculine pronoun is in fact underspecified for gender and stands in opposition to a pronoun specified as [FEM]. Parallel to this, in a system adopting an [ADD] feature, one might expect a first person pronoun to be used when it is unknown whether the discourse participant referred to by the pronoun is the speaker or the addressee. However, as the

speaker is the person uttering the sentence containing the pronoun, this use would imply that the speaker does not know who he or she is. But of course, speakers do know who they are.[10]

Of course, in systems using a [SP] feature, the prediction is that it is the second person pronoun that can be used to mean "you or me". This is equally impossible, at least for the strong pronoun *jij*. Proponents of the [SP] feature would presumably explain this in terms of the confound just discussed. Zeijlstra (2011) has argued, however, that the weak pronoun *je* can in fact be used as such an underspecified form, giving the example of a situation in a card game between two players A and B in which either player will win if they draw a red ace. In that case, A can describe the situation to B as follows:

(67) Als je een rode aas trekt, win je.
*if you a red ace draw, win you*
If you draw a red ace, you win.

Zeijlstra concludes from this that *je* can mean "you or I". However, we would dispute this conclusion. The meaning of (67) requires that *je* is underspecified in a much more radical way. Suppose that there are three players: A, B and C (C has briefly stepped out of the room to make a phone call). Suppose it is true of A and B that if they draw a red ace they win, but the same is not true of C. Then, it is not possible for A to use (67) to describe the state of play when addressing B. Instead, either of the examples below must be used:

(68) a. Als jij of ik een rode aas trekt, winnen we.
*if you or I a red ace draw, win we*
If you or I draw a red ace, we win.
b. Als wij een rode aas trekken, winnen we.
*if we a red ace draw, win we*
If we draw a red ace, we win.

The only possible situations in which (67) can be used are (i) if B draws a red ace, B wins (the referential reading); and (ii) if any player – whether speaker, addressee or temporarily absent player C – draws a red ace, they win. In other words, even the [PAR] feature of *je* in (67) is not interpreted on the intended reading. This fact casts some doubt on the assumption that in the singular the least specified pronoun is used if certain information about the referent is unknown. This conclusion is confirmed by the fact that situation (ii) above cannot be described by A using the utterance in (69), even though on almost anyone's theory the third person masculine pronoun is the least specified in the paradigm.

(69) Als-ie een rode aas trekt, wint-ie.
*if-he a red ace draws, wins-he.*
(Intended: If you draw a red ace, you win).

[10] It is perhaps more adequate to assume that speakers choose their pronouns on the assumption that they know who they are, even in pathological cases.

Zeijlstra's paper provides various other pieces of evidence in favour of a specification of *je* as [PAR] only. We will have to leave these for future research. Our conclusion for now is that for plural pronouns and verbal agreement there is strong evidence that supports the feature geometry in (5) for Dutch. For singular pronouns, most of the data are compatible with this geometry, with the weak second person pronoun *je* as a possible exception.

## 7. CONCLUSION

In this paper we have looked at three agreement alternations in Dutch. The most interesting patterns involve the interaction of morphological rules for modals, marking of politeness and agreement weakening under inversion. Our main conclusion with respect to the grammar of Dutch is that there is a single rule that accounts for agreement weakening under inversion. The irregularities observed with modals stem from independently motivated impoverishment rules that apply to these verbs irrespective of context. That polite second person forms behave differently from familiar forms follows from the fact that they contain an additional [HON] feature, which blocks agreement weakening.

The Dutch facts provide further evidence for the crucial role that feature geometry and impoverishment play in explaining natural language data. If we are correct, several distinct types of impoverishment rules must be distinguished that vary in their degree of generality. Moreover, application of impoverishment rules can be blocked by a ban on accidental deletion of dependent features.

*Version 1 – May 2011 – Comments welcome!*

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