PERSON SYNCRETISM, AGREEMENT ALTERNATIONS AND FEATURE GEOMETRY

Peter Ackema (University of Edinburgh) & Ad Neeleman (UCL)

In this paper we develop an analysis of syncretism in person agreement that captures several typological generalizations motivated in work by Baerman, Brown and Corbett (see Baerman et al. 2005:59 and Baerman and Brown 2011). Our account is based on the following core assumptions. (i) In languages with person agreement, the person specification of the verb is identical to that of the subject, even where this is not reflected by surface forms. (ii) First, second and third person are composed of two features, one shared by first and second person, the other shared by second and third person (see Kerstens 1993, Bennis and MacLean 2007, and Aalberse and Don 2010). (iii) Phi-features are organized in a feature geometry (see Gazdar and Pullum 1982 and Harley and Ritter 2002). (iv) Rules that operate on features (rules of impoverishment and spell-out rules) are sensitive to this geometry. We demonstrate that all four assumptions are motivated independently of the typological generalizations concerning the cross-linguistic frequency of patterns of syncretism. We test our proposal through a case study of Dutch agreement. In different circumstances, this language displays syncretism of second and third person, of first and second person, and even of first and third person, and it therefore provides a challenge for any theory aiming to explain person syncretism.

Keywords: Syncretism, agreement, person features, feature geometry, impoverishment, Dutch.

1. INTRODUCTION

An adequate theory of person features should make it possible to explain common patterns of person syncretism in subject-verb agreement. Among these patterns is the observation that paradigms in which first and third person marking are identical and stand in opposition to second person (1-3 syncretisms) are much rarer than paradigms in which either first and second person marking or second and third person marking are identical and stand in opposition to the remaining person (1-2 syncretisms and 2-3 syncretisms). Discussion of this observation can be found in Baerman et al. 2005:59 and Baerman and Brown 2011. In this paper we will attempt to capture this pattern, and others, using a new theory of person features. The empirical effects of this theory come about through restrictions on impoverishment and spell-out, giving rise to a formal account of syncretism in terms of feature structure.

We will test the proposed theory by considering agreement alternations in Dutch. The general pattern of subject-verb agreement in Dutch shows a 2-3 syncretism in the singular and absence of person marking in the plural: both second and third person singular subjects trigger a verbal *-t* ending; if the subject is plural, the verb systematically ends in *-en*. We illustrate this using the regular verb *lopen* 'to walk' in (1) ('hon' stands for honorific):[1]

[1] Unless stated otherwise, Dutch data are illustrative of the standard variant of the language. We will indicate explicitly where dialectal or historical variants are discussed.

Note that the alternation between *lop* and *loop* in (1) 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.

(1)

	lopen
1sg	Ik loop
2sg	Jij loop**t**
2sg hon	U loop**t**
3sg	Hij loop**t**
1/2/3pl	Wij/jullie/zij lop**en**

Deviations from this general paradigm are conditioned by three factors: (i) subject-verb inversion, (ii) verb class, and (iii) politeness. Let us illustrate each in turn. In (2), we see that the verbal affix that encodes second person singular is omitted under inversion. This results in a 1-2 syncretism, since the verb form that surfaces is identical to the first person form.

(2) 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'

In (3), we see that the modal verb *kunnen* 'can' has two distinct stems. Both can be used in the second person singular, giving rise again to an agreement alternation because only one stem allows an overt second person agreement ending. The same holds, with some variation, of some other modals. The result is that in the singular the relevant modals can be said to display an optional 1-3 syncretism.

(3)

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**

In (4), we see that the verb *hebben* 'have' also has two stem allomorphs. 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 verb form can be built on either, which suggests that it can alternate between second and third person singular agreement. In other words, although we see the regular 2-3 syncretism in the verbal endings, this verb distinguishes first and second person marking from third person marking through its stem form (a 1-2 syncretism).

(4)

HAVE	***Heb* forms**	***Heef* forms**
1sg	Ik heb	*Ik heef
2sg	Jij heb**t**	*Jij heeft
2sg hon	U heb**t**	U heeft
3sg	*Hij heb**t**	Hij heeft
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 (2) is not found when the polite second person pronoun is used as subject:

(5) 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?'

It will be clear that the alternations in Dutch between the basic 2-3 syncretism, the 1-2 syncretism found under inversion and the 1-3 syncretism found with certain modals form an

ideal testing ground for theories that aim to explain patterns of syncretism in verbal agreement.

This paper is organized as follows. In sections 2 and 3 we show that typologically common patterns of syncretism can be explained if specific assumptions are made about the features encoding person and specific restrictions are imposed on the application of rules of spell-out and impoverishment. In the remainder of the paper, we confront this proposal with the Dutch data. In section 4 we discuss the shift under inversion from the general 2-3 syncretism to a syncretism of first and second person marking. In section 5 we analyze the agreement paradigms of irregular verbs, including the 1-3 syncretism observed with some modals. In section 6, we turn to polite forms, discussing the alternation between second and third person agreement and the lack of agreement alternation with polite second person forms under inversion. Section 7 contains a summary and conclusion.

2. Features and Feature Geometry

2.1 *Feature Geometry*

Our starting point is the observation, mentioned above, that verbal agreement frequently shows 1-2 and 2-3 syncretisms, while 1-3 syncretisms are relatively rare, especially in the singular. We believe that this pattern cannot be explained unless second person has a feature in common with both first and third person, while first and third person share no features (see (6)).

(6)

First person	*Second person*	*Third person*
[F_1]	[F_1, F_2]	[F_2]

A proposal along such lines can be found in Kerstens 1993; this proposal was adopted by Bennis and MacLean 2007 and Aalberse and Don 2010 to deal with syncretism in Dutch dialects. Kerstens uses GB-style binary features (the features that correspond to F_1 and F_2 in

(6) are underlined): first person is characterized as [+utterance, +speaker], second person as [+utterance, –speaker], and third person as [–utterance, –speaker]. The fourth logical possibility, [–utterance, +speaker], is ruled out as contradictory.

The system we propose is similar, but is crucially based on privative features. The exact labelling these features is less important for our analysis than their distribution, but for concreteness' sake we will label them as [PROX] for 'proximate' and [DIST] for 'distal'. Their interpretation is speaker-oriented: [PROX] identifies individuals that are close to the speaker (which is intended to include the speaker themselves), while [DIST] identifies individuals that are removed from the speaker (which of course excludes the speaker). The combination [PROX DIST] identifies an individual in the middle ground: close to the speaker, but not the speaker themselves. Assuming that the feature specification chosen is the best match with the individual referred to, it is easy to see that the three persons can be characterized as follows:

(7)

First person	*Second person*	*Third person*
[PROX]	[PROX, DIST]	[DIST]

On this analysis, the person system has an obvious parallel in paradigms of demonstratives that distinguish between close, far and middle-distance, as found in Spanish, Japanese and Turkish, among other languages (see O'Grady et al. 1987/1996:297).

At first sight, a feature combination [PROX DIST] could be interpreted in two ways. It could refer to the unification of the sets identified by [PROX] and [DIST], or to their intersection. It will be clear that the intended interpretation of [PROX DIST] when used to characterize a referential second person pronoun is intersective. This interpretation can be forced if we make use of the idea that φ-features are organised in a feature geometry. In such a geometry a feature that restricts the interpretation of another feature is represented as a dependent of that feature. (The idea goes back at least to Gazdar and Pullum 1982; more recent proposals include Harley and Ritter 2002.) If in the second person [DIST] is dependent

on [PROX], then [DIST] must select an individual among the individuals that [PROX] refers to. Since [PROX] refers to individuals close to the speaker (the speaker themselves and the addressee(s)), while [DIST] excludes the speaker, the feature combination [PROX DIST] will correctly refer to the addressee(s).[2]

On this view, a language like Dutch, which distinguishes three persons and two numbers (singular and plural), has the following constellations of phi-features in its inventory:

(8)

	1st	2nd familiar	2nd polite	3rd
SG	a. φ | PROX	b. φ | PROX | DIST	c. φ | PROX | DIST | HON	d. φ | DIST
PL	e. φ: PROX, PL	f. φ: PROX, PL; PROX | DIST	g. φ: PROX, PL; PROX | DIST | HON	h. φ: DIST, PL

The root of all the trees in (8) 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 we will discuss). A single feature is enough to characterize the number system, namely [PL] for 'plural' (of course, languages that distinguish duals and paucals will have additional features dependent on [PL], such as [MIN]; see Harley and Ritter 2002). We have added polite second person forms to the inventory, as these are relevant to the analysis of Dutch. The feature [HON] (for 'honorific') that we use to distinguish such forms from

[2] We currently do not have any deeper insight into why [DIST] can be dependent on [PROX], rather than the other way around.

familiar addressee forms is dependent on the [DIST] feature, which in the second person is itself dependent on [PROX]. Both these other features must be mentioned in the specification of polite forms in Dutch, as only second person pronouns have a polite variant in the language.

We assume that the feature geometries in (8) are relevant both to pronouns and to verbal agreement. We further assume that even where 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 impoverishment 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 1976, Sproat 1985, Halle & Marantz 1993). In the remainder of this section we look at pronouns, turning to agreement in section 3.

2.2 *Pronouns*

The spell-out rules that insert the overt forms of Dutch subject pronouns are given below. We only give the rules that insert strong pronouns, but various pronouns have a weak counterpart; the context in which one or the other is used is immaterial to our analysis. 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 (as represented by the contrast between *hij*, *zij* and *het* in (9c)), again because these are not relevant to agreement in this language.

(9) a. $[_{\varphi}$ PROX$] \Leftrightarrow$ /ik/ / $[_{D}$ __] d. $[_{\varphi}$ PROX PL$] \Leftrightarrow$ /wij/ / $[_{D}$ __]

b. $[_{\varphi}$ PROX DIST$] \Leftrightarrow$ /jij/ / $[_{D}$ __]

c. $[_{\varphi}$ DIST$] \Leftrightarrow$ /hij/zij/het/ / $[_{D}$ __]

e. $[_{\varphi}$ PROX DIST PL$] \Leftrightarrow$ /jullie/ / $[_{D}$ __]

f. $[_{\varphi}$ DIST 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.

(10) *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 (8b), then any of the rules in (9a-c) may in principle be applied, as the structural description of each of these rules is compatible with the input. (The rules in (9d-f) cannot be applied, as they mention the feature [PL], which is absent in (8b)). The choice between (9a-c) is determined by the Elsewhere Principle. The domain of application of (9b) is a subset of the domains of application of (9a) and (9c), since (9b) can spell out only (8b), whereas (9a) and (9c) can in principle be applied to (8a,b) and (8b,d), respectively. Therefore, the Elsewhere Principle requires that (8b) is spelled out by (9b).

The Elsewhere Principle is also relevant to the interpretation of the various objects in (8) (thus defining the notion of 'best match' used informally above (7)). 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 (8a) could in principle be interpreted as referring to either the speaker or the addressee, as both are close to the speaker. 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 addressee, namely (8b). The Elsewhere Principle then implies that (8a) can *not* be taken to refer to the addressee, leaving the other participant, the speaker, as its only possible reference.

There is one immediate advantage to the system introduced above: it can explain why in many languages it is the second person singular pronoun that allows a generic interpretation, rather than a first or third person pronoun.[3] This usage is illustrated by the Dutch example in (11); for discussion of the typological generalization just mentioned, see Siewierska 2004 and Tarenskeen 2010:70ff.[4] As far as we know, an explanation for this generalization is still pending (compare Malamud 2011, section 4).

(11) Als je wint, heb je vrienden.
if *you win-2SG, you have-2SG friends*
'If you win, you'll have friends.'

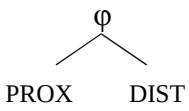
Presumably, the generic reading of pronouns requires that they appear in the scope of a generic operator. The question, then, is why the spell-out of the pronoun bound by this operator tends to be identical to the second person singular, given that other pronouns can be used as bound variables as well. The answer lies in the observation that on the relevant interpretation the set that the generic operator applies to must include everyone in the

[3] There are of course also dedicated generic pronouns (like English *one*), about which we have nothing to say. Plural pronouns can have a quasi-generic interpretation (as in *They say that algebra is difficult*). However, the interpretation of such pronouns excludes speaker and addressee and is therefore not truly generic.

[4] Typically the generic pronoun is identical to the weak second person pronoun, rather than any strong form. However, Bolinger (1979) observes that in the right context in English, use of a strong form is possible. Tarenskeen observes that the same is true of Dutch. Indeed, (11) is the title of a song by rockstars Herman Brood and Henny Vrienten. Brood in some instances pronounces the first pronoun as the strong pronoun *jij*: "als jij wint".

universe of discourse (speaker, addressee and any relevant third parties). In terms of the features we have adopted, this set is the unification of the sets that [PROX] and [DIST] denote. While domination in the feature geometry gives rise to an intersective reading (see above), unification obtains when both features are dependents of φ. In other words, we propose that the feature structure of generic pronouns is as follows:

(12)



Under the assumption that the structural description of a spell-out rule must mention features but not necessarily dependencies between features, the spell-out rule for second person singular pronouns ((9b) in Dutch) applies not only to (8b), but also to (12). Thus, the typological observation follows. Note that this account relies on two aspects of the theory we propose: (i) an analysis of person distinctions in terms of the features [PROX] and [DIST], and (ii) feature geometry (so that (8b) and (12) can be distinguished, despite the fact that they are characterized by identical feature combinations).

We have thus far not given spell-out rules for the polite forms in (8). The reason for this is that there is a complication, namely 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:

(13) a. U heeft natuurlijk allemaal/allebei de troonrede gehoord.
You.HON has of.course all/both the throne-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-PL of.course all/both the throne-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 (8g) in its lexicon. As a result, the polite pronoun *u*, which would then always be specified as in (8c), 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 (8g), it is not blocked by the Elsewhere Principle.

The second account assumes that there is a pronoun specified as in (8g), but that Dutch has a rule of impoverishment that deletes [PL] in the context of [HON]. We may formulate this rule as in (14), with (15) as the relevant additional spell-out rule.

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

(15) $[\text{PROX DIST HON}] \Leftrightarrow /\text{u}/ \; / \; [_{\text{D}} \_\_ \;]$

The rule in (14) is intended to be maximally general: it targets any feature structure containing [PL] and [HON]. 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 verbal agreement for this pronoun will appear to be singular, even though the relevant ending is syntactically specified as [PL].

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 (13a) the polite pronoun is associated successfully with floating quantifiers like *allemaal* ‘all’ and *allebei* ‘both’. 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 (16). The plural pronouns in the continuations in these examples 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*.[5]

(16) 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 the floating quantifiers can be present in (13a) therefore indicates that *u* contains a [PL] feature in syntax when it has a plural interpretation.

3. PERSON AGREEMENT AND SYNCRETISM

We now turn to the phonological realization of agreement endings, and to the issue of person syncretism in verbal paradigms.

We will assume 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). In other words, all languages that have person agreement have rich person agreement in the syntax (we will provide evidence for this claim in section 6). The fact that not all languages have rich agreement at an observational level is a matter of variation in phonological realization. In order to develop this proposal, we first consider German, a

[5] Note that Dutch is unlike British English in that a plural interpretation of a collective noun does not trigger plural agreement on the verb.

language in which each person triggers a distinct verbal ending in the singular (we consider the plural later). The paradigm of the verb *kaufen* 'buy' is representative:

(17)

	kaufen
1sg	Ich kauf**e**
2sg	Du kauf**st**
3sg	Er kauf**t**

In such a case, there is a distinct rule for each feature combination. The interaction of these rules is regulated by the Elsewhere Principle. In particular, the fact that (18b) must be used for the second person singular, instead of either (18a) or (18c), is because this is a more specific rule: it mentions two features, rather than one (see section 2.2).

(18) a. [PROX] ⇔ /e/ / V-[$_{\varphi}$ __]

b. [PROX DIST] ⇔ /st/ / V-[$_{\varphi}$ __]

c. [DIST] ⇔ /t/ / V-[$_{\varphi}$ __]

With this system in place, we now turn to paradigms that show person syncretisms, initially restricting our attention to the singular. We will ignore paradigms that do not show person distinctions at all, as such paradigms are accounted for by postulating a single spell-out rule that mentions only the φ-node (see section 3.3, footnote 7).

3.1 *2/3 versus 1*

In Dutch, we can observe a 2-3 syncretism in the singular:

(19) Standard

	kopen
1sg	Ik koop
2sg	Jij koop**t**
3sg	Hij koop**t**

Syncretism can of course always be analyzed as accidental homophony. That is, Dutch could have three spell-out rules (parallel to the German ones in (18)), which happen to realize both [PROX DIST] and [DIST] as *-t* (and [PROX] through a zero ending). Although accidental homophony doubtlessly exists, it would not be a very satisfactory account for this particular syncretism. As mentioned earlier, there is a clear cross-linguistic asymmetry in the patterns of syncretism found in the singular when the three persons are realized by two forms. The 2-3 syncretism illustrated by (19) is quite common. Baerman and Brown (2011) state that "[i]n the singular, by far the most common pattern is for 2nd and 3rd person to be identical". A 1-3 syncretism is very rare, see Baerman et al. 2005:59. Thus, the following typological distribution appears to hold in the singular:

(20) 2-3 >> 1-2 >> %%1-3 (singular)

If there is indeed an asymmetric distribution of this type, an explanation is order. When we consider the Dutch paradigm, one possible account for its 2-3 syncretism is to assume that the language lacks any spell-out rule mentioning [PROX], but only has a rule that realizes [DIST] as *-t*. This rule applies in the third person, and also in the second person, given that there is no more specific rule mentioning [PROX DIST] (which would otherwise block this, as in German). However, such an account is insufficiently general, as it is not the case that in all languages with a 2-3 syncretism the first person lacks an overt ending. This even holds within Dutch, which has several dialects in which first person agreement takes the form of a schwa or schwa-*n* ending, but which do show the same 2-3 syncretism as the standard (see Aalberse 2007:134):

(21) Dialectal I

	kopen
1sg	Ik kop**e**(**n**)
2sg	Jij koop**t**
3sg	Hij koop**t**

Such dialects must have the spell-out rules in (22a) and (22b) (which realize first and third person). By analogy, we assume that the standard language has the spell-out rules in (22a') and (22b). It does not have a designated spell-out rule for the [PROX DIST] specification of the second person, as Geman does, as the 2-3 syncretism would otherwise just be a coincidence (see above). The question, then, is why the second person, which after all carries both [PROX] and [DIST], is realized through application of (22b) (resulting in a 2-3 syncretism), rather than through application of (22a,a') (which would result in a 1-2 syncretism).

(22) a. [φ PROX] ⇔ *e*(*n*) / V-[__]

a'. [φ PROX] ⇔ Ø / V-[__]

b. [φ DIST] ⇔ *t* / V-[__]

Notice that the answer to this question cannot lie in the Elsewhere Principle, given that the feature sets [PROX] and [DIST] used in the structural descriptions of the rules in (22a,a') and (22b) do not stand in a subset-superset relation. We therefore propose that all rules that operate on phi-feature geometries are subject to the condition in (23).

(23) *The Russian Doll Principle*

In a configuration with a host feature and a dependent feature, it is not possible to apply a rule whose structural description mentions the host feature but not the dependent feature.

In other words, in a geometry in which [F_3] is dependent on [F_2] and [F_2] is dependent on [F_1], rules that can apply must have a structural description that mention [F_3], [F_2 F_3] or [F_1 F_2 F_3]. Rules that mention [F_1], [F_2] or [F_1 F_2] only cannot apply. (This is parallel to Russian Russian dolls in that you can see an outer doll without seeing the dolls it contains, but not vice versa.)

Notice that in the feature geometry that characterizes the second person [DIST] is dependent on [PROX] (see (8b)). Given (23), this means that second person agreement can be realized by (22b), but not by (22a,a'). In conclusion, the Russian Doll Principle allows us to account for the common occurrence of 2-3 syncretisms as a simple case of underspecification in spell-out rules (in particular the absence of a designated spell-out rule for [PROX DIST].

3.2 *1/2 versus 3*

Given this account, one may wonder how 1-2 syncretisms can be captured at all. These are found in various languages (see Baerman at al. 2005; compare (20)), including certain dialects of Dutch. Aalberse (2007:132) notes that in a few dialects first and second person both lack an overt ending, while third person is marked by *-t*; she also notes that in at least one dialect first and second person subjects both trigger a schwa ending:

(24) Dialectal II

	kopen
1sg	Ik koop/kop**e**
2sg	Jij koop/kop**e**
3sg	Hij koop**t**

These dialects have the same spell-out rules as other versions of Dutch, namely those in (22). This must be so in view of the way first and third person are realized. Where these dialects differ, we propose, is in having an additional impoverishment rule that deletes [DIST] in the context of [PROX]:

(25) $[\text{DIST}] \rightarrow \emptyset \; / \; \text{V-}[_{\varphi} \_\_ \; \text{PROX}]$

As a result of the application of this rule, the input for spell-out is [PROX] for both first and second person agreement. Hence, the rule in (22a,a') applies in both cases, yielding the paradigm in (24).

More in general, we suggest that 1-2 syncretisms differ from 2-3 syncretisms in that they can only be explained through a rule of impoverishment that deletes [DIST]. The fact that an additional rule of impoverishment is necessary is enough to explain why 1-2 syncretisms are rarer than 2-3 syncretisms.

Notice that this account crucially relies on feature geometry. This is because it relies on a distinction between [PROX] as a feature that hosts [DIST] and [PROX] as a feature without dependents. As a consequence of the Russian Doll Principle, the former cannot be realized by a spell-out rule that mentions only [PROX], while the latter can. Since [DIST] can always be realized by rules that mention no other feature (abstracting away from elsewhere effects), the asymmetry between 1-2 and 2-3 syncretism follows. A system in which the features characterizing the various persons are not part of geometry (such as that of Bennis and MacLean 2006) cannot capture this asymmetry.

3.3 *1/3 versus 2*

As mentioned in connection to (20), 1-3 syncretisms in the singular are very rare, certainly less frequent than 2-3 and 1-2 syncretisms. This is a direct consequence of the theory we propose. The reason is that first and third person have no features in common, and therefore there can be no spell-out rule that assigns them the same form. The only combination of spell-out rules that could give rise to a 1-3 syncretism is the one in (26), where there is a rule for the second person and a general rule that realizes any φ-node (but see footnote 6). The two rules in (26), combined with the Elsewhere Principle, would have the joint effect that second person is marked as *-b*, while first and third person are marked by *-a*.

(26) a. $[\varphi] \Leftrightarrow a$ / V-[$_{\varphi}$ __]

b. [PROX DIST] $\Leftrightarrow b$ / V-[$_{\varphi}$ __]

However, this combination of rules is not enough to generate a 1-3 syncretism. This is because the rule in (26a) cannot in fact be applied in the first or third person, as doing so would violate the Russian Doll Principle. In both cases there is a feature dependent on the φ-node that is not mentioned by the rule ([PROX] and [DIST], respectively).

The implication is that the feature dependent on φ in the first and third person must be deleted, so that application of (26a) is compatible with the Russian Doll Principle. Such deletion can be achieved through two impoverishment rules of the following form:

(27) a. [PROX] → Ø / V-[$_{\varphi}$ φ–__]

b. [DIST] → Ø / V-[$_{\varphi}$ φ–__]

These rules must mention the φ-node in their structural description. That is, in order to be a candidate for deletion, the [PROX] or [DIST] feature must be a direct dependent of φ. (We indicate this in (27) using a dash. Here and below, the feature to the right of the dash is a direct dependent of the feature to its left.). The effect of this specification is that the rules in (27) cannot apply to the [PROX–DIST] feature structure that characterizes the second person. The rule in (27b) cannot apply in the second person singular, because in this person [DIST] is not a direct dependent of φ (it is instead a direct dependent of [PROX]). The rule in (27a) cannot apply, as that would violate the Russian Doll Principle. The consequence is that the feature structure of the second person remains intact, while first and third person end up with a bare φ-node after impoverishment, thereby providing the basis for a 1-3 syncretism.

From the above, it will be clear that compared to 1-2 syncretisms, 1-3 syncretisms require an additional impoverishment rule, whereas 2-3 syncretisms do not require any impoverishment. This may explain the relative ordering in (20): grammars with more impoverishment rules may be rarer than languages with fewer impoverishment rules. However, it seems to us that there is more to be said, given that 1-2 syncretisms are relatively

common, while 1-3 syncretisms are very uncommon and probably always restricted to a sub-part of the verbal paradigm in any given language.

In order to explain this, we propose the following constraint on spell-out systems:

(28) *No Skipping Constraint*

If a language has a spell-out rule that realizes a dependent feature, it must also have a spell-out rule that realizes the host feature, but not the dependent feature.

The immediate effect of the No Skipping Constraint is that a spell-out system that only contains the rules in (26) is banned. The existence of the spell-out rule in (26b), which mentions the dependent feature [DIST], is conditional on the existence of a spell-out rule that mentions [PROX], but not [DIST]. As such a rule is absent in (26), this particular inventory of spell-out rules violates (28). Suppose, then, that in addition to the rules in (26), the language also has a spell-out rule for [PROX]:

(29) [PROX] ⇔ *c* / V-[$_{\varphi}$ __]

However, if the rules in (27) would apply generally to all finite verbs in all contexts, this would lead to systematic deletion of the feature [PROX] in the first person. This in turn creates a situation in which the spell-out rule in (29) could never be applied. It could not be applied in the first person, since the relevant feature is deleted before spell-out. It also could not be applied in the second person, as that would violate the Russian Doll Principle (moreover, if (26b) is present, applying (29) in the second person would violate the Elsewhere Principle as well). A rule that is never applied cannot be acquired and therefore cannot exist. But this

means that we are back to a system of the form in (26), which violates the No Skipping Constraint.[6,7]

As a consequence, the impoverishment rules in (27) can only be applied in subparts of the verbal paradigm, leaving unaffected other parts of the paradigm where the rule in (29) can apply, leading to a distinct first person form. It must therefore be the case that the rules in (27) have a specific context of application. One such context can be the plural, as we will see in the next subsection.

Our overall conclusion, then, is that 1-3 syncretisms can only exist under the following circumstances (apart from cases of accidental homophony). (i) The language has impoverishment rules of the type in (27). (ii) The structural description of these rules is further restricted, so as to apply only in specific contexts. This second condition is necessary, because the contexts in which the rules do *not* apply will permit the existence of a spell-out rule for [PROX] (alongside spell-out rules for [PROX-DIST] and/or [DIST]. The existence of such

---

[6] Note that the No Skipping Constraint also excludes a system that only has the spell-out rule in (26b). Such a system would give rise to a paradigm in which first and third person are not marked, while second is marked by *-b*.

[7] Notice that it is admissible to have a spell-out rule like (26a) in the absence of any other spell-out rule mentioning person features. Such rules are probably necessary to account for 1-2-3 syncretisms. For example, certain Dutch dialects have a *-t* ending that appears with all persons in the singular (see Aalberse 2007: 128):

(i) Dialectal III

	kopen
1sg	Ik koop**t**
2sg	Jij koop**t**
3sg	Hij koop**t**

(ii) $[\varphi] \Leftrightarrow$ *-t* / V-[__]

Application of this rule will not violate the Russian Doll Principle if the language has systematic impoverishment of all person features in verbs, or alternatively if verbs do not agree for person to begin with, obviously the more economical analysis.

a rule is the only way to satisfy the No Skipping Constraint in a language that has a spell-out rule that applies to the second person.

It now follows that 1-3 syncretisms will be rarer that 2-3 syncretisms, which do not require any impoverishment, as well as 1-2 syncretisms, which require a single unrestricted rule of impoverishment.

The No Skipping Constraint can plausibly be seen as a restriction that regulates language acquisition. It says, in effect, that a child will not posit a spell-out rule that mentions a dependent feature, unless a spell-out rule mentioning the host feature has already been posited. This reflects a strategy according to which the child posits maximally general rules, which may overgenerate, but from which retraction is easy. If 'skipping' were possible, the child could posit unnecessarily specific rules, which may undergenerate and from which retraction seems impossible (related proposals can be found in Pinker 1986, Adger 2006 and Blom, Polišenská and Weerman 2006).

For example, on noticing that some forms are marked for number, a child acquiring a language with a plural and a dual will first posit a spell-out rule for [PL]. Only when the child notices that within the set of plural forms a distinction is made between endings can they posit a more specific spell-out rule mentioning [MIN]. A child acquiring a language with a plural but no dual will simply never reach this second stage.

Suppose that skipping were possible. This would not necessarily cause problems for a language with a dual, but a child acquiring a language without a dual could first posit a rule mentioning [MIN] and subsequently (when it encounters a plural noun that cannot have a dual interpretation) introduce a rule mentioning [PL]. This rule would have to insert the same phonological form as the rule mentioning [MIN]. Although the net result is an obviously uneconomical system, it is unclear that the child could abandon it on the basis of positive

evidence. Hence, the No Skipping Constraint appears necessary to guarantee that the system acquired is maximally simple.[8]

3.4 *Syncretism in the Plural*

One context to which application of the rules in (27) may be restricted is the plural. We can illustrate this using data from German, in which first and third person plural are marked by *-en*, while a second person plural subject triggers a *-t* ending:

(30)

	kaufen
1pl	Wir kauf**en**
2pl	Ihr kauf**t**
3pl	Sie kauf**en**

Given that all three persons are distinguished in the singular, the version of the impoverishment rules in (27) operative in German must mention [PL] in addition to φ. The paradigm in (30) is generated then through interaction of the impoverishment rules in (31) and the spell-out rules in (32). Notice that this set-up does not violate the No Skipping

[8] The No Skipping Constraint makes predictions about the order of acquisition of paradigmatically related forms. Spell-out rules that mention dependent features should be acquired later than spell-out rules that mention just the host feature. In the case of person marking, this means that the acquisition of second person marking must follow the acquisition of first person marking. Similarly, the acquisition of dual marking should follow the acquisition of plural marking, and the acquisition of dative marking should follow the acquisition of accusative marking (assuming that dative is a version of accusative with an additional dependent feature; compare Neeleman & Weerman 1999, Caha 2009). We do not know to what extent these predictions are correct, but there is some literature that appears to confirm them, at least for certain languages. Clahsen (1988) observes the late acquisition of second person marking in German; Tracy (1984) and Clahsen et al. (1994) observed the late acquisition of dative case.

Constraint, as German does indeed have a spell-out rule for [PROX] (see (18a)), which operates in the singular, in addition to spell-out rules for [PROX–DIST (PL)].

(31) a. [PROX] → Ø / V-[$_{\varphi}$ φ–__ PL]

b. [DIST] → Ø / V-[$_{\varphi}$ φ–__ PL]

(32) a. [PL] ⇔ *en* / V-[$_{\varphi}$ __]

b. [PROX DIST PL] ⇔ *t* / V-[$_{\varphi}$ __]

A similar situation exists in earlier versions of standard Dutch, as well as in some present-day Dutch dialects. There is one additional complication here that is absent in German: the second person plural is systematically identical to the second person singular. There is a historical explanation for this identity, as the original second person singular form was ousted by its plural counterpart, which was introduced in the singular as a polite form and spread subsequently (see Aalberse 2009 for discussion). A synchronic account of this syncretism between second person singular and second person plural requires a third impoverishment rule, given in (34) below. (Dutch shares with German the spell-out rule in (32a). The spell-out rule for [DIST] is given in (22b). In Dutch, this rule will apply in the second person plural after application of (34) (see section 3.1)).

(33) Historical/Dialectal IV

	kopen
1pl	Wij kop**en**
2pl	Jullie koop**t**
3pl	Zij kop**en**

(34) [PL] → Ø / V-[$_{\varphi}$ __ PROX DIST]

Modern Standard Dutch has a more straightforward system. In the plural, no person distinctions are made:

(35)

	kopen
1pl	Wij kop**en**
2pl	Jullie kop**en**
3pl	Zij kop**en**

This implies that the grammar of Modern Standard Dutch has been simplified in two ways. First, the impoverishment rule in (34) has been lost. Second, the rules in (31) have become more general, in that their structural description does not mention the φ-node as part of their context of application. Thus, Modern Dutch has the following two impoverishment rules.

(36) a. [PROX] → Ø / V-[$_{\varphi}$ __ PL]

b. [DIST] → Ø / V-[$_{\varphi}$ __ PL]

These rules do not only apply in the first and third person plural, but will also strip away person features in the second person plural. The [PROX–DIST] feature complex can be reduced to [PROX] by application of (36b) (given that the rule does not mention any particular host feature for [DIST]). After this, (36a) can apply (this does not violate the Russian Doll Principle once [DIST] has been removed). The result is that there is no longer a foothold in the plural for spell-out rules mentioning person features; rather the rule in (32a) applies to all persons.

The account just provided seems to be in line with the characterization of the plural as a context that in general favours person syncretisms (see also Aalberse and Don 2010). More specifically, our theory predicts that although 1-3 syncretisms should remain relatively rare, they should be more common in the plural than in the singular. Of course, this prediction needs to be tested using typological data, but the typological literature we are aware of does not contradict it.

There is a second typological contrast between singular and plural. While there is a clear asymmetry between 1-2 and 2-3 syncretisms in the singular, the same is not true of the plural.

Baerman et al. (2005:59) state that "[i]n the non-singular, 1/2 and 2/3 both occur in roughly equal measures, while 1/3 is less common:"

(37) 1-2 <> 2-3 >> %1-3 (plural)

We think that this leveling of 1-2 and 2-3 syncretisms might be the result of a general tendency for impoverishment of person features in the plural (which also results in the 1-3 syncretisms and 1-2-3 syncretisms observed in different versions of Dutch and German, as explained above). Recall that 1-2 syncretisms result from impoverishment of [DIST] in the presence of [PROX] (see (25)). This impoverishment can work in all contexts, but it is also possible that the rule mentions a special context. The implication is that more languages will show a 1-2 syncretism in the plural than in the singular. The number of languages that show such a syncretism in the plural is the sum of the languages with a general impoverishment rule (which is also relevant to the singular) and the languages in which the impoverishment rule mentions the plural as its context of application. Such an effect of context is not relevant for 2-3 syncretisms, as these are not the result of impoverishment. The overall result is a leveling in the plural of 1-2 and 2-3 syncretisms.

4. *A SHIFT IN SYNCRETISM UNDER INVERSION*

In sections 2 and 3, we have developed a theory of phi-features that can explain typological patterns of person syncretism. As a further test of this theory, we will now consider the intricate pattern of syncretisms found in Dutch. As mentioned in section 1, depending on context and verb class, the regular 2-3 syncretism characteristic of the singular can make way for a 1-2 syncretism and even a 1-3 syncretism. In this and the following sections we argue that the proposed feature geometry is instrumental in accounting for these shifts in syncretism, if combined with specific context-sensitive rules of impoverishment. We start with the shift in syncretism that is associated with subject-verb inversion.

Recall that in Dutch the agreement ending of a second-person singular verb is affected by its relative position with respect to the subject. If the subject precedes the verb, agreement is realized as *-t*; in structures with inversion, the verb does not carry overt agreement:

(38) 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 other words, the regular 2-3 syncretism changes to a 1-2 syncretism when there is subject-verb inversion. The upshot of the discussion in section 3.2 is that 1-2 syncretisms must be the result of impoverishment. This meshes well with the account we gave of the agreement alternation in (38) in Ackema & Neeleman 2004. There, we argued that the data can be captured using a particular type of impoverishment rule, whose domain of application is phonologically defined, namely as 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.

The effect of this process depends, of course, on how phonological phrases are constructed in a language. In this respect, 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, such as Dutch, there is right-alignment (compare Selkirk 1986, Tokizaki 1999):

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

Two things must be noted in connection to (39). 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 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 (39) delivers the following initial prosodic structures for the examples in (38), where prosodic phrases are indicated by braces:

(40) a. {Jij} {leest het boek}.
you read-2SG the book

b. {Ik} {geloof dat jij} {het boek} {leest}.

I believe that you the book read-2SG

c. {Lees jij} {het boek}?

read you the book

The impoverishment rule responsible for the agreement alternation in Dutch can be formulated as in (41); we will refer to it as 'agreement weakening'. What it expresses is that the [DIST] feature of an agreeing verb is deleted in the presence of [PROX], 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):

(41) *Agreement Weakening*

$[\text{DIST}] \rightarrow \emptyset$ / {V-[$_{\varphi}$ PROX __]$_i$ [D φ_i]}

Given the prosodic structures in (40), this rule can apply in (40c), but not in (40a,b), as only in (40c) do verb and agreeing subject end up in the same prosodic phrase. Consequently the verbal agreement ending, whose syntactic specification is [PROX DIST], will only be specified as [PROX] 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 (22a')).

In modern standard Dutch, the rule in (41) can only have an effect in the singular, as in the plural the impoverishment rules in (36) obliterate all person distinctions. Recall, however, that in the older version of the standard language mentioned in section 3.4, the second person plural still had an ending *-t* distinct from the general plural ending *-en* (see (33)). In contexts where the subject appears right-adjacent to the verb, this *-t* ending disappears; instead the general plural ending *-en* surfaces (see Buitenrust Hettema 1891, Van Loey 1970, and

Aalberse 2009), as predicted by the rule in (41). The phenomenon is illustrated in (42), where both *jullie heb-t* 'you(plural) have-2' and *hebb-en jullie* 'have-PL you(plural)' occur in the same sentence.[9]

(42) Jullie hebt het aangevoeld en terecht hebben jullie ... Historical

you(PL) have-2 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 (43) show that this operation is neither blocked in the

[9] 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 [PROX DIST] (see (34)) is ordered after the agreement weakening rule that deletes [DIST] in inversion contexts. Agreement weakening then destroys the context of application of (34), so that [PL] survives in the second person. In addition, rule (31a), which deletes [PROX] in the presence of [PL] must also be ordered after agreement weakening, so as to ensure that at spell-out *only* [PL] survives (note that application of (31a) in the second person is no longer be blocked by the Russian Doll Principle once (41) has removed [DIST]). As we will see, an ordering in which agreement weakening precedes rules like (31) and (34) is as expected given the nature of these rules (see the discussion surrounding (65)).

In an even older stage of the language, inversion led to complete loss of any marking in the second person plural (see Aalberse 2009:168), indicating that the agreement weakening rule targeted the entire φ-node, including its dependent [PL] feature, rather than just the [DIST] feature.

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).

(43) 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 (41) do not allow intervening fronted objects:

(44) 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 (44b), as generated by the alignment rule in (39), is as in (45). Crucially, the right edge 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 (41) is not met, so that it cannot apply in this case.

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

The situation with intervening modifiers is more subtle. There appears to be considerable speaker variation in the extent to which adverbials can intervene between an impoverished verb form and a following second person subject. In general, we can distinguish three classes of modifiers: (i) bare-head modifiers like *morgen* 'tomorrow', (ii) 'P-modifiers' like *op zondag* 'on Sunday', which consist of a preposition and a bare-head complement, and (iii) complex modifiers like *na elke maaltijd* 'after each meal' or *op de warmste dag van het jaar* 'on the hottest day of the year.' Our assessment is that speakers differ in which of these classes they allow to intervene between an impoverished verb and its subject. Some speakers do not allow any intervening modifier (Hans van de Koot, p.c.). Others allow intervention of bare-head modifiers, but not others (this corresponds to Ackema's intuitions). Still others accept intervention of both bare-head modifiers and P-modifiers (this corresponds to Neeleman's intuitions; see also Zonneveld 2007). We have not found speakers who accept intervening complex modifiers, but for another phenomenon possibly conditioned by initial prosodic phrasing in the same way as agreement weakening (namely complementizer agreement), such intervention is accepted by Haegeman and van Koppen (2011). The overall picture that emerges is one of an implicational hierarchy:

(46) bare head modifiers >> P-modifiers >> complex modifiers

Anyone who allows intervention by a particular type of modifier on this hierarchy also allows intervention by all elements to its left.

Our take on these data is as follows. The alignment principle in (39) has the consequence that the right edge of any maximal projection will trigger φ-closure. This includes adverbial phrases, regardless of how much material they contain. Therefore, an adverbial phrase separating verb and subject will in principle destroy the context in which the agreement weakening rule applies, as illustrated in (47):

(47) {Volgens mij} {loop **AdvP**} {zelfs jij} {naar het café}.

according.to me walk AdvP even you to the pub

However, it is quite plausible that there are additional mapping principles mediating between syntactic and prosodic structure that are sensitive to the amount of structure that a syntactic phrase contains. For instance, 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 itself (see Ackema & Neeleman 2004:187, 271). One could imagine that this kind of rule is sensitive to the syntactic complexity of the modifier, so that larger modifiers do not permit such boundary erasure. Speaker variation would then result from variation in the cut-off point, as follows:

(48) Boundary erasure between modifier and modifiee is

(A) unconditional

(B) blocked if the modifier consists of:

(i) anything,

(ii) more than just a bare head,

(iii) more than a preposition and a bare head.

This gives rise to the following pattern of judgments, which is in line with our current impression of the empirical situation:

(49) a. %Volgens mij loop morgen zelfs jij naar het café. (* if (48Bi))

according.to me walk tomorrow even you to the pub

b. %%Volgens mij loop op zondag zelfs jij naar het café. (* if (48Bi/ii))

according.to me walk on Sunday even you to the pub

c. %%%Volgens mij loop op zo'n warme dag zelfs jij naar het café. (* if (48Bi/ii/iii))
according.to me walk on such a warm day even you to the pub

More research is necessary to clarify the exact range of speaker variation. However, if there is indeed an effect of size on the acceptability of intervening modifiers, this clearly lends extra plausibility to an account of agreement weakening based on prosodic phrasing.

In contexts where the rule in (41) cannot apply, we would expect that the regular agreement ending for a second person singular verb surfaces, as in (50). It is indeed the case that all speakers we have consulted find an example like (50) better than the same example with a verb form resulting from agreement weakening (that is, *loop* instead of *loopt*). Nonetheless, the sentence is not simply acceptable and there is considerable speaker variation.

(50) ?{Volgens mij} {loopt op de laatste avond van het jaar} {zelfs jij} {naar het café}.
according.to me walk-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:

(51) ?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 (52), where XP is not the subject, they will expect a third person singular subject, with the consequence that the continuations in (50) and (51) create a garden path effect.

(52) 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 (53) for instance, are worse than (50) to begin with, and do not improve either with repetition or if the distance between verb and subject is enlarged.

(53) *Volgens mij lopen op de laatste avond van ’t jaar zelfs jij naar het café.
according.to me walk-PL *on the last evening of the year even you*.SG *to the pub*

In conclusion, although some empirical questions remain, it is clear that in Dutch the 1-2 syncretism is limited to a special context (associated with inversion), whereas the regular 2-3 syncretism appears in all other contexts. This fits well with an account in which the latter is a direct result of underspecification in the spell-out system, whereas the former requires a rule of impoverishment. After all, such rules can specify a context of application, while there is no such thing as a context for underspecification.

As mentioned in the introduction, there is one exception to the rule of agreement weakening: polite second person subjects do not trigger it. We will address this issue in section 6.

5. *A SHIFT IN SYNCRETISM DEPENDENT ON VERB CLASS*

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, and there appears to be a degree of optionality in forms, in particular in the second person singular. As we will see, this is highly relevant to the agreement alternation under inversion discussed in the previous section. We will argue that there are specific impoverishment rules for irregular verbs, but that the agreement alternation under inversion with these verbs simply follows the rule in (41).

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 (54) and (55) (we leave out the polite forms for now):

(54)

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**

(55)

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 shows any agreement 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.

The upshot is that in the singular, rather than the regular 2-3 syncretism, we find a 1-3 syncretism (*kan*/*zal* – *kunt*/*zult* – *kan*/*zal*), alongside a 1-2-3 syncretism with *kan*/*zal* for all persons.

As discussed in section 3.3, 1-3 syncretisms can only exist if (i) the language has impoverishment rules of the type in (27), and (ii) the structural description of these rules is further restricted, so as to apply only in specific contexts. This second condition guarantees compatibility with the No Skipping Constraint. In the case at hand, the specific context in which the impoverishment rules apply consists of a specific verb class to which *kunnen* and *zullen* belong (a class we will simply label 'modal' below, even though some verbs traditionally classified as modals behave like regular verbs). Thus, the 1-3 syncretism observed with these modals is accounted for by the rules in (56). These have the result is that in the singular all φ-feature information in first and third person verbs is deleted, leaving just a bare φ-node. As there is no spell-out rule in Dutch that can realize bare φ-nodes (see (22a',b)), no ending is inserted in the first or third person when these rules apply.

(56) a. [PROX] → Ø / Modal-[$_{\varphi}$ φ–__]

b. [DIST] → Ø / Modal-[$_{\varphi}$ φ–__]

In order to account for the alternation observed in the second person singular, we assume that there is a further rule of impoverishment in modals that targets [DIST] when dependent on [PROX]. In contrast to the two rules in (56), this third rule is optional:

(57) [DIST] → Ø / Modal-[$_{\varphi}$ PROX–__] (optional)

When (57) applies, it results in a feature geometry [φ–PROX]. In this configuration, [PROX] will be targeted by the obligatory rule in (56a), with the result that the second person will also end up with a featureless φ-node, which will not be spelled out. However, when (57) does not

apply, neither of the rules in (56) can apply either. The rule in (56b) cannot be applied, because in the second person, [DIST] is not dependent on φ, but on [PROX]. Hence the rule's structural context is not met. Because [DIST] cannot be removed, the rule in (56a) cannot be applied either, as the rule does not mention [DIST] while it mentions the [PROX] feature that [DIST] is dependent on, thereby violating the Russian Doll Principle in (23).

The stem allomorphy in (54)/(55) can now be accounted for if the factor regulating the distribution of the two stem forms is the presence or absence of content in the φ-node. We will encode this using spell-out rules that have a specific context of application, namely a φ-node with content. These are given in (58b) and (59b), where F is a variable over phi-features (compare Halle & Marantz 1993:151-152). The general spell-out rules for these modals are given in (58a) and (59a). Interaction between the rules is regulated by the Elsewhere Principle.

(58) a. CAN ⇔ /kan/

b. CAN ⇔ /kun// __-[$_{\varphi}$ φ–F]

(59) a. WILL ⇔ /zal/

b. WILL ⇔ /zul// __-[$_{\varphi}$ φ–F]

Consider how (56)-(59) account for the paradigms of *kunnen* and *zullen*. The first person singular loses its [PROX] feature as the result of application of (56a). This means the stems will be realized by (58a) and (59a), resulting in *ik kan* 'I can' and *ik zal* 'I will'. Similarly, application of (56b) results in loss of φ-features in the third person, so that the same stem allomorphs are selected: *hij kan* 'he can' / *hij zal* 'he will'. In the plural, the rules in (36) delete person features as usual. Given that there is a [PL] feature, however, the rules in (58b) and (59b) are triggered and the stems selected will be the *kun*/*zul*-forms. [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 (57) applies or not. As noted, if it does apply, so will (56a), 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 stems mentioned in (58a) and (59a): *jij kan*/*zal* 'you can/will'. As also discussed, if (57) does not apply, neither can (56a,b). Hence, in this case a fully specified φ-node survives, so that the stems mentioned in (58b) and (59b) are selected and the regular *-t* ending is inserted: *jij kunt*/*zult* 'you can-2SG/will-2SG'.

The rules just introduced for modals interact with the process of agreement weakening discussed in section 4. This interaction results in forms that only occur in inversion contexts, namely the uninflected form of the *kun*/*zul* stem. Since this stem never occurs in the first person, it may seem that our account of agreement weakening, which reduces [PROX DIST] to [PROX], is misguided (see Zonneveld 2007). However, as we will now show, the data are exactly as predicted. No adjustments to the rule in (41) are necessary to deal with modals in inversion contexts.

Because of the optionality of the rule in (57) there are again two derivations to consider. In case (57) and hence (56a) apply, there are of course no phi-features left to delete, and therefore what we find is the same bare form *kan*/*zal* that occurs in the absence of inversion. This option is illustrated in (60).

(60) 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?'

Now consider the case where (57) and therefore (56a,b) do not apply. Assuming that these rules are ordered before agreement weakening, the end result is a structure CAN/WILL-[φ PROX]. The CAN/WILL stems are hence realized by (58b) and (59b), while [PROX] is spelled out by the regular ending for this feature cluster, namely zero. Therefore, the forms expected under inversion are *kun* and *zul*. This option indeed exists alongside (60):

(61) 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?'

The *kun*/*zul* forms never appear in the first person, because [φ–PROX] is systematically reduced to a bare φ-node by (56a), so that the *kan*/*zal* stems must be selected. In the second person, agreement weakening does result in a [φ–PROX] feature structure, but on the assumption already introduced that the rules in (56) are ordered before (41), (56a) cannot target this structure.

In sum, the rule ordering required in this analysis is the following:

(62) a. Impoverishment in modal verbs (56, 57)

b. Impoverishment in prosodic domains (41)

c. Spell-out rules (including (9), (22), (58) and (59))

That this yields the corrects results is demonstrated by the sample derivations for *kan jij* 'can you' and *kun jij* 'can you' in (63) and (64), respectively.

(63) CAN-[$_{\varphi}$ PROX DIST]

CAN-[$_{\varphi}$ PROX] (57) applies

CAN-[$_{\varphi}$] by (56a)

{CAN-[$_{\varphi}$] [$_{DP}$ [$_{\varphi}$ PROX DIST]]} (41) is not applicable

/kan/ /jij/ by (58a) and (9b)

(64) CAN-[$_{\varphi}$ PROX DIST]

CAN-[$_{\varphi}$ PROX DIST] (57) is not applied

CAN-[$_{\varphi}$ PROX DIST] (56b) is not applicable

CAN-[$_{\varphi}$ PROX DIST] (56a) is blocked by (23)

{CAN-[$_{\varphi}$ PROX DIST] [$_{DP}$ [$_{\varphi}$ PROX DIST]]}

{CAN-[$_{\varphi}$ PROX] [$_{DP}$ [$_{\varphi}$ PROX DIST]]} by (41)

/kun/ /jij/ by (58b), (22a') and (9b).

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. 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.

The ordering of rules that manipulate phi-feature structures is determined by the generality of their application, with more generally applied rules following less generally applied rules. How general a rule is in this respect can be determined 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 generally applied type of rule. Examples are rules that implement feature co-occurrence restrictions in a language, such as the ones in (36) (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 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 generally applied type of rule. If the answer to this second question is also negative, we are dealing with the least generally applied type of rule. This final class includes optional rules and rules that target specific lexical items only (such as certain modal verbs). The resulting rule order is given below:

(65) a. Optional and item-specific impoverishment rules (such as (56) and (57))

b. Agreement weakening in prosodic domains (such as (41))

c. Impoverishment rules implementing feature co-occurrence restrictions (such as (36))

This correctly captures the crucial part of the ordering in (63) and (64) (item-specific impoverishment precedes agreement weakening).

The data discussed in this section cannot be used to empirically test the ordering of the agreement weakening rule in (41) and more general impoverishment rules like (36). However, the ordering given in (65b,c) matches the data in older stages of Dutch, where agreement weakening could be observed in the second person plural, resulting in a form only expressing the [PL] feature. If the order of (65b,c) were inverted, [PL] would be deleted by (34), incorrectly yielding a zero ending after agreement weakening (see also footnote 9).

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 there being two spell-out rules for the stem:

(66)

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 (57) 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, (57) is still optional for this verb, resulting in an additional form *moogt* 'may-2SG'.)

(67)

MAY	***Mag* forms**	***Moog* forms**
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 more verbs that have an irregular agreement paradigm: *hebben* 'have' and *zijn* 'be'. The former has two stem forms whose distribution depends on the presence of a [DIST] feature directly dependent on φ. In other words, one stem form only appears in the third person singular, while the other appears everywhere else (recall that in the plural the [DIST] feature is deleted by the impoverishment rule in (36b) before spell-out takes place. The paradigm and the rules relevant for the stem alternation are given below:

(68)

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**

(69) a. HAVE ⇔ /heb/

b. HAVE ⇔ /heef/ / __-[$_{\varphi}$ φ–DIST]

The second person singular undergoes the agreement weakening rule in (41) 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 (70).

(70)

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

This paradigm shares one property with the one for regular verbs, 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’). The other forms in *be*’s finite paradigm cannot be analyzed as consisting of a stem plus an affix. The third person singular is clearly suppletive. The same is true, in present-day Dutch at least, 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:

(71) a. BE ⇔ /ben/[10]

b. BE-[$_{\varphi}$ PL] ⇔ /zijn//

c. BE-[$_{\varphi}$ φ–DIST] ⇔ /is/

There are two main conclusions from this section. First, the 1-3 syncretism found with modals can successfully be analyzed as involving impoverishment in a specific context (namely a specific verb class). Second, there is no need to adjust the agreement weakening rule in (41) 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 are subject to independently motivated impoverishment and stem allomorphy rules. 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 (41).

6. *THE EFFECTS OF POLITENESS*

Not all languages have polite pronouns, English being a conspicuous example. Among the languages that express politeness, the polite pronoun is often the second person plural form. It is an open question whether such pronouns are really plural or contain a [HON] feature. Current standard Dutch, however, has a dedicated polite pronoun, *u*, which is different from both the second person singular familiar pronoun and the second person plural pronoun. This pronoun must therefore have a [HON] feature (as already assumed in section 2). In this section we will show that the presence of a [HON] feature in the subject can have an effect on the

[10] The rule in (a) should perhaps be restricted to the context in (i). 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.

(i) BE ⇔ /ben//__-[$_{\varphi}$ φ–PROX]

realization of verbal agreement. This is remarkable, because the feature itself is never expressed on verbs in Dutch. The data will thus support the view that, if a language has person agreement, all person features contained in the subject are underlyingly present in the verbal morphology.

The fact that [HON] is never realized on verbs in Dutch can be accounted for by adopting the impoverishment rule in (72). In fact, such a rule prevents a potential problem with the realization of agreement for [PROX DIST] in the context of a polite subject. If [HON] were not deleted, its presence would block spell-out of the [DIST] feature that it is dependent on (see (8c)), because of the Russian Doll Principle.

(72) [HON] → Ø/ V-[$_{\varphi}$ __]

One may wonder how [HON] can have any effect on verbal agreement if it is systematically deleted in verbs. Note, however, that the rule in (72) is a general rule that implements a feature co-occurrence restriction in Dutch: it prevents the co-occurrence of [V] and [HON]. This means that it will be ordered relatively late in the sequence of impoverishment rules that operate between syntax and spell-out. This sequence was given in (65). As can be seen there, a rule of the type in (72) follows both item-specific impoverishment rules and impoverishment rules conditioned by prosodic domains. [HON] will therefore still be able to exert an influence on these earlier types of rules. Below we will provide some examples of this.

Before we can turn to the relevant data, we should deal with a complicating factor. 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'.[11] 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 (73).

(73)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 (73) 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 (73b,c) could not be generated. Rather we must be dealing, once more, with an optional impoverishment rule that operates after syntactic 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 (73b,c) are to be expected.

[11] Third person forms of *be* in polite contexts are considered old fashioned by many speakers. For these speakers, *be* must be marked as not being input to (74a).

The impoverishment rule in question can be formulated as in (74a). This rule feeds a second, obligatory, impoverishment rule that deletes [HON] in the context of [φ–DIST], with the net result that a regular third person feature specification obtains. The rule in (74b) can be seen as repairing the output of the rule in (74a), as that rule produces a structure in which [HON] is present in the absence of [PROX], which is not in accordance with the feature geometry in (8).[12]

(74) a. [PROX] → Ø / [$_{\varphi}$ __ DIST HON] (optional)

b. [HON] → Ø/ [$_{\varphi}$ __ φ–DIST]

Let us first consider how the rules in (74) capture the alternation between reflexive *u* and *zich* (we mark reflexives as [+a(naphoric) –p(pronominal)] in order to set them apart from pronouns). The derivations are given below (/zich/ is the general spell-out of the third person anaphor, while the second person polite anaphor has the same form as the polite personal pronoun *u*).

(75)	[$_{DP}$ [+a -p] [$_{\varphi}$ PROX DIST HON]]	(74a) is not applied
	/u/	by (15)
(76)	[$_{DP}$ [+a -p][$_{\varphi}$ PROX DIST HON]]	
	[$_{DP}$ [+a -p] [$_{\varphi}$ DIST HON]]	(74a) is applied
	[$_{DP}$ [+a -p] [$_{\varphi}$ DIST]]	by (74b)
	/zich/	

The alternation between second and third person verbal forms is accounted for in the same way. The only difference with the case of anaphors is that there is no specifically polite

[12] Notice that (74a) does not violate the Russian Doll Principle. Even though it deletes a feature that hosts two dependent features, its structural description mentions these dependent features, as required.

agreement ending, as a result of the rule in (72). We give the derivations of *u hebt* and *u heeft* below, where deletion of [PROX] results in a different choice of stem.

(77) $[_{DP}\ [_{\varphi}$ PROX DIST HON]] HAVE-$[_{\varphi}$ PROX DIST HON] (74a) is not applied

$[_{DP}\ [_{\varphi}$ PROX DIST HON]] HAVE-$[_{\varphi}$ PROX DIST] by (72)

/u/ /heb-t/ by (15), (69a) and (22b)

(78) $[_{DP}\ [_{\varphi}$ PROX DIST HON]] HAVE-$[_{\varphi}$ PROX DIST HON]

$[_{DP}\ [_{\varphi}$ PROX DIST HON]] HAVE-$[_{\varphi}$ DIST HON] (74a) is applied

$[_{DP}\ [_{\varphi}$ PROX DIST HON]] HAVE-$[_{\varphi}$ DIST] by (74b)

/u/ /heef-t/ by (15), (69b) and (22b)

As noted, (74a) 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:

(79) *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 (79), we propose that there is a general principle that rules out that pronouns that retain their features in one context are partially impoverished in another:

(80) *Protected pronouns*

No rule of feature deletion with a limited domain of application may target a proper subset of the φ-features in a pronoun.

The notion of pronoun used in (80) is meant to stand in opposition to reflexive expressions, much as in 'classical' binding theory. The latter do permit partial impoverishment, as already shown. 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 verbal agreement weakening of the type in (41). 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 person reduction in Dutch.[13]

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 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 (41) (see Ackema and Neeleman 2004:222-229). It is even possible that a language has both prosodically conditioned impoverishment rules like (41) 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.

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

In Ackema and Neeleman 2004:230-231, we suggest that (80) 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 hearer must use either the agreement on the verb or the discourse context to determine the reference of the argument.[14]

We now turn to the effects of [HON] on the realization of verbal agreement, beginning with 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 (74a), there are two derivations to consider. If the rule applies (leading to a [DIST] feature specification after (74b)), the context for application of the agreement weakening rule in (41) is destroyed (as this rule mentions [PROX]). Hence, the verb will surface in its third person form, irrespective of word order. If the rule in (74a)

[14] This explanation may extend to an observation by Bennis (2006): polite reflexives do 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 subject-less 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 u/*zich niet!

make-mistake you.HON/REFL not

Do not make a mistake (polite)!

b. U hebt u/zich een beetje vergist, hè?

You.PL have.2SG you.HON/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 you.HON/REFL a bit made-mistake, TAG

does not apply, the verb is specified as [PROX DIST HON], and could therefore in principle be targeted by the rule in (41). However, application of (41) is blocked by the Russian Doll Principle in this case because of the presence of [HON]. Hence, the verb will surface in its second person form, irrespective of word order.

So, 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 (it realizes [DIST] by (22b) in both cases; see section 2). This blocking of the agreement weakening rule, illustrated below, is a first illustration of the effects of [HON] on verbal agreement:

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

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

The prediction for the verb *hebben* 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. That this is indeed the case is shown in (82) and (83).

(82) 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?'

(83) 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?'

For concreteness' sake, we give the derivation for *hebt u* 'have.2SG you.HON' and *heeft u* 'have.3SG you.HON' below.

(84)	HAVE-[φ PROX DIST HON] [DP [φ PROX DIST HON]]	(74a) is not applied
	HAVE-[φ PROX DIST HON] [DP [φ PROX DIST HON]]	application of (41) is blocked
	HAVE-[φ PROX DIST] [DP [φ PROX DIST HON]]	by (72)
	/heb-t/ /u/	by (69a), (22b) and (15),
(85)	HAVE-[φ PROX DIST HON] [DP [φ PROX DIST HON]]	
	HAVE-[φ DIST HON] [DP [φ PROX DIST HON]]	(74a) is applied
	HAVE-[φ DIST HON] [DP [φ PROX DIST HON]]	(41) is not applicable
	HAVE-[φ DIST] [DP [φ PROX DIST HON]]	by (74b)
	/heef-t/ /u/	by (69b), (22b) and (15)

The prediction we make for modal verbs is slightly more involved, because of the impoverishment rules that specifically apply to these verbs. Recall that this impoverishment is optional in the second person (see (57)). If no feature deletion takes place, the result is the same as for regular verbs and *hebben* 'have'. What appears under inversion is a fully

inflected second person form, as application of (41) is blocked by the Russian Doll Principle. This option is illustrated in (86). (Note that the stem form is also in accordance with modal impoverishment not having applied; see section 5.)

(86) 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?'

One may think that the non-impoverished form of modals should in fact be the only option in polite contexts. Given that modal-specific impoverishment rules are ordered before a rule of the type in (72) (see (65)), [HON] will be present at the point that the modal impoverishment rules are active and hence should block their application because of the Russian Doll Principle. This cannot be correct, as the uninflected modal form can appear with polite subjects:

(87) 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?'

A simple repair would be to adjust the optional rule in (57), so that does it does not only delete [DIST], but also [HON] when present:

(88) [DIST(–HON)] → Ø / Modal-[$_{\varphi}$ PROX–__] (optional)

But there is something more interesting to be said here, as for many speakers *u kunt* 'you.HON can.2SG' is preferred over u kan 'you.HON can' in formal registers. This cannot be explained by saying that *kunt* itself is somehow marked as formal. After all, it is perfectly generally used in combination with the familiar pronoun *jij* 'you', which in formal registers is avoided. A better explanation would be to say that there is a version of (88) that is specific to the formal register, namely the version that does not mention [HON]:

(89) [DIST] → Ø / Modal-[$_{\varphi}$ PROX–__] (optional; formal)

As just explained, this implies that the only form that will appear with the polite pronoun *u* in formal registers is *kunt*. If correct, this is a second effect of the presence of [HON] in verbs.

In conclusion, the agreement patterns found with polite pronouns show that there is full underlying identity between the person/number specification of subjects and that of verbal agreement, which includes [HON]. We have also seen that the absence of agreement weakening with polite pronouns falls out from the Russian Doll Principle, without any adjustment of the rule in (41).

7. *CONCLUSION*

In this paper we have developed and tested an analysis that captures several generalizations concerning the relative typological frequency of different syncretisms in the expression of person. These generalizations can be summarized as in (90), where >> indicates decreasing frequency and <> comparable frequency (see Baerman et al. 2005:59 and Baerman and Brown 2011 for discussion).

(90) a. 2-3 >> 1-2 >> $^{\%\%}$1-3 (singular)

b. 1-2 <> 2-3 >> %1-3 (plural)

The typological data can be made to follow from the following core assumptions:

(i) In languages with person agreement, the person specification of the verb is identical to that of the subject, even where this is not reflected by surface forms.

(ii) First, second and third person are composed of two features, [PROX] and [DIST]. [PROX] is shared by first and second person, while [DIST] is shared by second and third person (compare Kerstens 1993, Bennis and MacLean 2007, and Aalberse and Don 2010).

(iii) Phi-features are organized in a feature geometry (see Gazdar and Pullum 1982 and Harley and Ritter 2002). In particular, the three persons have the following composition: First person: [$_{\varphi}$ φ–PROX], second person: [$_{\varphi}$ φ–PROX–DIST], third person: [$_{\varphi}$ φ–DIST].

(iv) Rules that operate on features (rules of impoverishment and spell-out rules) are sensitive to this geometry, in particular as a consequence of two principles: the Russian Doll Principle (see (23)) and the No Skipping Constraint (see (28)).

The overall effect of these assumptions is as follows:

(v) 2-3 syncretisms are the result of simple underspecification of the spell-out system (there are rules realizing [PROX] and [DIST], but no rule for [PROX DIST].

(vi) 1-2 syncretisms require an additional rule of impoverishment that deletes [DIST] in the context of [PROX].

(vii) 1-3 syncretisms require two rules of impoverishment that delete [PROX] in [$_{\varphi}$ φ–PROX] and [DIST] in [$_{\varphi}$ φ–DIST]. These rules must have a restricted context of application (such a plural or modal verbs).

These results jointly explain the generalizations summarized in (90).

We have tested our proposal using Dutch, which displays a range of syncretisms varying with context (there is a general 2-3 syncretism in the singular, a 1-2 syncretism under subject-verb inversion, and a 1-3 syncretism in some modal verbs). In addition there are effects of the use of the polite second person pronouns. The various patterns of syncretism can successfully be analyzed along the lines of (v)-(vii) above.

Dutch also provides evidence independent of the typology of person syncretism for the assumptions in (i)-(iv). We give two examples here. First, agreement weakening under inversion is suspended with polite second person pronouns. This supports assumption (i): in order for it to influence the realization of verbal agreement, [HON] must be present in verbs, even though it is never itself spelled out. It also supports assumptions (iii) and (iv), as these provide the basis for our explanation of the effects of [HON] in verbs. Second, in Dutch and various other languages second person pronouns double as generic pronouns. This supports assumptions (ii) and (iii), as these are crucially involved in the explanation of this fact.

19 August 2011

REFERENCES

Aalberse, Suzanne (2007). The Typology of Syncretisms and the Status of Feature Structure: Verbal Paradigms across 355 Dialects. *Morphology* 17, 109-149.

Aalberse, Suzanne (2009). *Inflectional Economy and Politeness*. PhD dissertation, University of Amsterdam. (LOT dissertation series 208.)

Aalberse, Suzanne and Jan Don (2010). Person and Number Syncretisms in Dutch. *Morphology* 21, 327-350.

Ackema, Peter and Ad Neeleman (2004). *Beyond Morphology*. Oxford: Oxford University Press.

Ackema, Peter and Ad Neeleman (2010). Subset Controllers in Agreement Relations. Ms. University of Edinburgh / UCL.

Ackema, Peter and Ad Neeleman (to appear). Agreement Weakening at PF: A Reply to Benmamoun and Lorimor. To appear in *Linguistic Inquiry*.

Adger, David (2006). Combinatorial Variability. *Journal of Linguistics* 42, 503-530.

Baerman, Matthew and Dunstan Brown (2011). Syncretism in Verbal Person/Number Marking. In: M. Dryer and M. Haspelmath (eds.), *The World Atlas of Language Structures Online*. Munich: Max Planck Digital Library, chapter 29. Available online at http://wals.info/chapter/29 Accessed on 2011-08-19.

Bearman, Matthew, Dunstan Brown and Greville Corbett (2005). *The Syntax-Morphology Interface: A Study of Syncretism*. Cambridge: Cambridge University Press.

Benmamoun, Elabbas and Heidi Lorimor (2006). Featureless Expressions: When Morpho-phonological Markers are Absent. *Linguistic Inquiry* 37, 1-23.

Bennis, Hans (2006). Agreement, Pro, and Imperatives. In: P. Ackema, P. Brandt, M. Schoorlemmer and F. Weerman (eds.), *Arguments and Agreement*, 101-123. Oxford: Oxford University Press.

Bennis, Hans and Alies MacLean (2006). Variation in Verbal Inflection in Dutch Dialects. *Morphology* 16, 291-312.

Blom, Elma, Daniela Polišenská and Fred Weerman (2006). Effects of Age on the Acquisition of Agreement Inflection. *Morphology* 16, 313-336.

Bolinger, Dwight (1979). To Catch a Metaphor: *You* as Norm. *American Speech* 54, 194-209.

Bonet, Eulàlia (1991). *Morphology after Syntax: Pronominal Clitics in Romance*. PhD dissertation, MIT.

Bonet, Eulàlia (1995). Feature Structure of Romance Clitics. *Natural Language and Linguistic Theory* 13, 607–47.

Buitenrust Hettema, Foeke (1891). De aangesproken persoon. *Taal en Letteren* 1, 148-153.

Caha, Pavel (2009). *The Nanosyntax of Case*. PhD dissertation, University of Tromsoe.

Clahsen, Harald (1988). *Normale und gestörte Kindersprache*. Amsterdam: John Benjamins.

Clahsen, Harald, Sonja Eisenbeiss and Anne Vainikka (1994). The Seeds of Structure: A Syntactic Analysis of the Acquisition of Case Marking. In: T. Hoekstra and B. Schwartz (eds.), *Language Acquisition Studies in Generative Grammar*, 85-118. Amsterdam: John Benjamins.

Dehé, Nicole (2006). Some Notes on the Focus-Prosody Relation and Phrasing in Icelandic. In: G. Bruce and M. Horne (eds.), *Nordic Prosody - Proceedings of the IXth Conference*, Lund 2004, 47-56. Frankfurt a.M.: Peter Lang.

Den Besten, Hans (1976). Surface Lexicalization and Trace Theory. In: H. van Riemsdijk (ed.), *Green Ideas Blown Up*, 4-28. Amsterdam: University of Amsterdam Publikaties van het Instituut voor Algemene Taalwetenschap.

Gazdar, Gerald and Geoffrey Pullum (1982). *Generalized Phrase Structure Grammar*: *A Theoretical Synopsis*. Bloomington, IN: Indiana University Linguistics Club.

Ghini, Mirco (1993). Φ-formation in Italian: A New Proposal. *Toronto Working Papers in Linguistics* 12, 41-78.

Haegeman, Liliane and Marjo van Koppen (2011). Complementizer Agreement and the Relation Between C^0 and T^0. Ms. University of Ghent / Utrecht University.

Halle, Morris and Alec Marantz (1993). Distributed Morphology and the Pieces of Inflection. In: K. Hale and S. J. Keyser (eds.), *The View from Building 20*, 111-176. Cambridge, MA: MIT Press.

Harley, Heidi (1994). Hug a Tree: Deriving the Morphosyntactic Feature Hierarchy. *MIT Working Papers in Linguistics* 21, 275-288.

Harley, Heidi and Elizabeth Ritter (2002). Person and Number in Pronouns: A Feature-Geometric Analysis. *Language* 78, 482–526.

Kerstens, Johan (1993). *The Syntax of Person, Number and Gender*. Berlin: Mouton de Gruyter.

Kiparsky, Paul (1973). "Elsewhere" in Phonology. In: S. Anderson and P. Kiparsky (eds.), *A Festschrift for Morris Halle*, 93-106. New York: Holt, Rinehart and Winston.

Malamud, Sophia (2011). Impersonal Indexicals: *one*, *you*, *man* and *du*. *Journal of Comparative Germanic Linguistics.* (forthcoming).

McCarthy, John and Alan Prince (1993). Generalized Alignment. In: G. Booij and J. van Marle (eds.), *Yearbook of Morphology 1993*, 79-153. Dordrecht: Kluwer.

Monachesi, Paola (2005). *The Verbal Complex in Romance*. Oxford: Oxford University Press.

Neeleman, Ad & Fred Weerman (1999). *Flexible Syntax*. Dordrecht: Kluwer.

O'Grady, William, Michael Dobrovolsky and Francis Katamba (1987). *Contemporary Linguistics: An Introduction*. London: Longman.

Pinker, Steven (1986). Productivity and Conservatism in Language Acquisition. In: W. Demopoulos and A. Marras (eds.), *Language Learning and Concept Acquisition*, 54-79. Norwood, NJ: Ablex.

Selkirk, Elisabeth (1984). *Phonology and Syntax: The Relation between Sound and Structure*. Cambridge, MA: MIT Press.

Selkirk, Elisabeth (1986). On Derived Domains in Sentence Phonology. *Phonology* 3, 371-405.

Siewierska, Anna (2004). *Person*. Cambridge: Cambridge University Press.

Sproat, Richard (1985). *On Deriving the Lexicon*. PhD dissertation, MIT.

Tarenskeen, Sammie (2010). From You to Me (and Back): The Flexible Meaning of the Second Person Pronoun in Dutch. MA thesis, Radboud University Nijmegen.

Tokizaki, Hisao (1999). Prosodic Phrasing and Bare Phrase Structure. In: P. Tamanji, M. Hirotami and N. Hall (eds.), *Proceedings of NELS 29*, 381-395. Amherst: GLSA.

Tracy, Rosemarie (1984). Fallstudien; Überlegungen zum Erwerb von Kasuskategorie und Kasusmarkierung. In: H. Czepluch and H. Janssen (eds.), *Syntaktische Struktur und Kasusrelationen*, 271-313. Tübingen: Gunter Narr.

Truckenbrodt, Hubert (1999). On the Relation between Syntactic Phrases and Phonological Phrases. *Linguistic Inquiry* 30, 219-255.

Van Bart, Peter, Johan Kerstens and Arie Sturm (1998). *Grammatica van het Nederlands*. Amsterdam: Amsterdam University Press.

Van Loey, Adolphe (1970). *Schönfeld's grammatica*. Zutphen: Thieme.

Zonneveld, Wim (2007). Dutch 2nd Singular Prosodic Weakening: Two Rejoinders. *Linguistic Inquiry* 38, 737-748.