Remarks on Richness*

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Abstract

In the last two decades researchers have repeatedly challenged the generalisation that pro-drop depends on rich agreement. Although alternative approaches have proved rather unsuccessful, there are two long-standing problems which undermine agreement-based analyses: (i) the lack of a formal definition of 'rich agreement' and (ii) the existence of languages which disallow pro-drop despite having relatively rich verbal morphology (e.g. Icelandic). In this paper I argue for a view of morphology that takes syncretism to arise from the under-specification of formal features and I propose a definition of richness which seems to successfully capture some of the well-known crosslinguistic differences in the distribution of pro-drop.

1 Introduction

A number of generative analyses have been developed in an attempt to formalize the intuition that pro-drop[1] is a by-product of rich agreement systems (see for example Perlmutter 1971; Taraldsen 1978, Rizzi 1982). However, these proposals have repeatedly faced the notorious problem of defining what type of system qualifies as *rich*.

[1] The term "pro-drop" is meant to exclude so-called "radical pro-drop" languages (e.g. Chinese, Japanese). Although these also allow omission of arguments, the distributional differences that we find between radical pro-drop and agreement-based pro-drop indicate that we are dealing with two separate phenomena (e.g. Tomioka 2003). Moreover, Neeleman and Szendroi (2005) have convincingly argued that radical pro-drop is conditioned by pronominal – rather than verbal – morphology, thus explaining why generalisations that have tried to collapse the two phenomena have been so unsuccessful. I will disregard radical pro-drop throughout.

   Various attempts have been made at defining richness, some of which involve rather elaborate formulations. One example is a generalisation proposed by Rohrbacher (1999) according to whom a language can have pro-drop if "in at least one number of one tense of the regular verb paradigms, the person features [1] and [2] are both distinctively marked" (1999:116). Though this seems to make the correct distinction between – for example – English and Italian, it does not straightforwardly exclude languages like German, which seem to distinguish between first and second person:

(1)		English: poor agreement	Italian rich agreement	German ?
	1st sg	walk	cammin**o**	spazier**e**
	2nd sg	walk	cammin**i**	spazier**st**
	3rd sg	walk**s**	cammin**a**	spazier**t**
	1st pl	walk	cammin**iamo**	spazier**en**
	2nd pl	walk	cammin**ate**	spazier**t**
	3rd pl	walk	cammin**ano**	spazier**en**

Nevertheless, German does not allow pro-drop[2], as shown in (2):

(2)   Er sagte dass *(er) den Hund gesehen hat
       he said that (he) the dog   seen   has
       'he said that he has seen the dog'

This has led a number of researchers to conclude that rich agreement is not a reliable predictor for pro-drop and that the explanation must lie elsewhere (e.g. Jaeggli and

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[2] Some Germanic languages allow omission of a pronoun when this is discourse given and has undergone movement to a sentence-initial position. E.g. Dutch (from Neeleman and Szendroi 2005:3):

(i) $\varnothing_1$ ken ik t_1 niet
          know I   not
       'I don't know pro.'

(ii) $\varnothing_1$ ken t_1 hem niet.
          know him not
       'pro don't know him.'

However, this type of pronoun omission (usually referred to as "topic-drop") is a clearly distinct phenomenon as – unlike pro-drop – it is dependent on movement and it affects both subjects and objects.

Safir 1989, Alexiadou and Anagnostopoulou 1998, among others). However, I would like to argue that it would be too hasty to abandon the idea that – at least within the type of pro-drop I am concerned with – rich agreement plays an important part.

Moreover, it must be noted that even if we were to agree that what appears to mark first person in German is in fact a bare stem (a possible assumption and one which would give support to Rohrbacher's generalisation) it would still be desirable to gain some understanding as to why first and second person enjoy such special status. Indeed, I believe that there is some insight to be gained if we are willing to make the assumptions outlined below.

2 Morphological Specifications
2.1 Feature Binarity

With regard to the nature of morphological paradigms, I will assume – following a long tradition – that Person as well as Number features are binary (for more recent formulations see – among others – Noyer 1992, Koeneman 2000). Because the postulation of a Person feature does not allow for a binary distinction, the different person specifications will be taken to arise from the combination of SPEAKER and ADDRESSEE features instead.

   Moreover, I will adopt the view that morphological features may be underspecified. This view is inspired by the work of Blevins (1995) who proposes that syncretism should be taken to arise from feature under-specification. The features associated with each paradigm member, he argues, must necessarily be defined in direct opposition with other members if feature-based analyses are to move beyond simple descriptive formalism. The English verbal paradigm illustrates this point:

(3)   English Paradigm
         walk   1-sg   walk   1-pl
         walk   2-sg   walk   2-pl
         walk-**s**   3-sg   walk   3-pl

Besides creating some unnecessary redundancy, associating the form *walk* with five separate feature specifications is conceptually unrevealing to say the least. A much more parsimonious alternative is to recognise that the two separate forms stand in direct opposition:

(4)   Paradigmatic Opposition: English

> walk-**s**   marked: 3-sg
> walk   unmarked, general form

It can then be assumed, following Andrews (1990), that a condition on morphological blocking will prevent the general form from applying when a more specified one exists[3], hence the ungrammaticality of examples like *he walk*.

Following a long tradition (dating back to Chomsky and Halle 1968), alpha-notation is used to indicate underspecification:

(5)   Underspecification
> walk-**s**   3-sg
> walk αperson, βnumber

Another important argument against the analysis in (3), and therefore in favour of underspecification, comes from learnability considerations. Pinker (1984) argues that unconstrained proliferation of feature specifications to be mapped onto homophonous strings leads to serious learnability problems[4]. A theory that allows zero-inflection to occur indiscriminately has no way of preventing children from hypothesising grammaticalisable features for every single lexical item that belongs to a potentially inflectable category. Needless to say, this leads to massive computational waste and potential failure to achieve the target language.

Consequently, Pinker suggests a development of Slobin's (1984) hypothesis by proposing that postulation of feature specifications must be limited to those cases where the input provides a morphological contrast in the form of some overtly realised feature bundle(s), as may be the case in the English verbal paradigm. This would successfully solve the computational problem. Because the child encounters the *–s* affix in third person singular cases, s/he will be able to postulate a specific 3rd person singular form *and* contrast this with an underspecified 'elsewhere' case. In cases where no morphological marking is present at all, however, there is no contrast to trigger the postulation of specific features. Therefore, the number of specific features postulated by the language learner is directly proportional to the number of distinct morphological forms found in the input (see also Koeneman 2000).

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[3] This condition Andrews (1990) proposes appears to be a specific instantiation of the more general Elsewhere Principle (see Kiparsky 1973 and subsequent work).

[4] Whether we assume the analysis in (3) to apply to the item *walk* or to a phonologically empty suffix does not affect this point.

Given these assumptions, the representation of a paradigm which distinguishes between all six forms is shown in (6):

(6)   Italian: Inf: parlare ('to speak')

1sg	parl-**o**	+sp αad +sg	1pl	parl-**iamo**	+sp αad -sg
2sg	parl-**i**	-sp +ad +sg	2pl	parl-**ate**	-sp +ad -sg
3sg	parl-**a**	-sp -ad +sg	3pl	parl-**ano**	-sp -ad -sg

First person singular and plural are underspecified for the feature ADDRESSEE. As Koeneman (2000) points out, this is reflected in the fact that first person plural is ambiguous as to whether or not it includes the addressee within its referent[5]. As far as first person singular is concerned, the inclusive reading is automatically ruled out by the *+sg* specification.

3 Defining Richness
3.1 Feature Opposition

The idea that rich agreement licenses pro-drop is based on the intuition that the properties of the missing pronoun can somehow be identified through the morphological inflection. In some sense, a paradigm is rich if it can unambiguously instantiate its formal properties. Such instantiation has the consequence that no further specification will be required and therefore no pronoun is needed[6].

I would like to propose that a paradigm unambiguously instantiates its formal properties if and only if it realises each possible feature opposition. In other words, unambiguous instantiation results if each of the three possible feature types appears in both a positive and a negative setting within the paradigm. On the other hand, if for

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[5] Note that this does not mean that 1st person is never specified for the feature ADDRESSEE, as some languages do mark the distinction between inclusive and exclusive 1st person in the plural (e.g. Arabic).

[6] Of course, in pro-drop languages pronouns can also be present (i.e. the same formal properties can be instantiated twice). It seems that the most natural way of looking at this is from the point of view of Relevance Theory (Sperber and Wilson 1995) whereby the effort involved in processing the same information twice must reward the hearer with extra cognitive effects. Indeed, it is well known that the use of overt pronouns in pro-drop languages is pragmatically highly marked (e.g. contrastiveness, topicalisation etc.).

some feature a paradigm realises only one value plus an underspecified value, the system allows for ambiguity. This becomes clearer when we consider that an αf (underspecified) value can only be distinguished from a specified one – say +f – if alpha is able to acquire the opposite value (minus in this case). However, alpha can only acquire the minus value if some other element in the structure can supply it. Therefore, lack of opposition means obligatory presence of this 'some other element', namely an overt pronoun. The key claim I am making is that the obligatory presence of pronouns in a language reflects a failure to unambiguously instantiate formal properties in the verbal paradigm as a whole rather than in individual verbal forms.

Given this assumption, the German paradigm can be distinguished from the Italian one. The former, but not the latter, lacks opposition within the ADDRESSEE as well as the SINGULAR feature. This is because it does not mark the 1st and 3rd person plural at all, while in 3rd sing and 2nd plural it only marks SPEAKER:

(7)   German paradigm; Inf.: spazier-en ('to walk')
        1sg   spazier-**e**   +sp αad +sg   1pl   spazier-**en**
        2sg   spazier-**st**   -sp +ad +sg   2pl   spazier-**t**   -sp αad βsg
        3sg   spazier-**t**   -sp αad βsg   3pl   spazier-**en**

As can be seen from the table in (7), the German paradigm specifies neither the ADDRESSEE nor the SINGULAR feature in the 3rd person singular: the morpheme –*t* must be underspecified as it is compatible with both 3sg and 2pl.

In fact, German lacks a plural form altogether; for 2nd person plural a general -*sp* form is inserted. The 1st and 3rd person plural, on the other hand, are realised through a default form which lacks all person and number features, namely the infinitive. Note that the infinitive morpheme cannot be assumed to be simply underspecified for the three features since it seems counterintuitive to associate person and number features with infinitivals. Also, it seems reasonable to assume that the infinitive too carries some features. For example, Giorgi and Pianesi (1997) argue that what sets apart the infinitive from finite forms is their different value for the feature PERFECTIVE while Hoekstra and Hyams (1998) suggest a difference with regard to the feature REALISED. However, the issue of what other differences the two groups may have is of no immediate importance to our discussion and will therefore be left unexplored. What does seem relevant is that – unlike finite verbs – infinitives lack person/number features altogether.

A situation similar to the one we saw for German is also found in Icelandic. Assuming that the 1st person singular is not unmarked[7], the Icelandic paradigm looks as follows:

(8)   Icelandic paradigm; Inf: seg-ja ('to say')

1sg	seg-**i**	+sp αad +sg		1pl	seg-**jum**	+sp αad -sg
2sg	seg-**ir**	-sp αad +sg		2pl	seg-**ið**	-sp +ad -sg
3sg	seg-**ir**	-sp αad +sg		3pl	seg-**ja**	

Although the Icelandic paradigm is slightly richer than the German one (unlike German, Icelandic realises opposition for the SINGULAR feature) it does not realise opposition for the ADDRESSEE feature as the only person that provides a value for this feature is the 2nd plural. Similar to German, Icelandic lacks a form for the 3rd person plural, thus realising a default form in that position. Of course, Icelandic is not a pro-drop language.

3.2 How Poor is Rich?

It is important to note that the definition of richness I am proposing does not imply that all forms must be distinguishable or that a paradigm must not contain any underspecified forms (*contra,* for example, Rizzi 1982, Koeneman and Neeleman 2001: footnote 23). This point can be illustrated with Portuguese. This language does not distinguish between 2nd and 3rd person plural in a manner reminiscent of the Icelandic system, which – as we saw – does not specify 2nd and 3rd person in the singular (though Icelandic also displays further underspecification, cf. (8) above). Nevertheless, the Portuguese paradigm still qualifies as rich for it realises full opposition, as can be seen from the table in (9):

(9)   Portuguese paradigm; Inf: compr-ar ('to buy')

1sg	compr-**o**	+sp αad +sg		1pl	compr-**amos**	+sp αad -sg
2sg	compr-**as**	-sp +ad +sg		2pl	compr-**am**	-sp αad -sg
3sg	compr-**a**	-sp -ad +sg		3pl	compr-**am**	-sp αad -sg

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[7] An alternative interpretation would be that the first person singular in Icelandic (and perhaps in German too) involve a phonologically empty suffix specified as +sp αad +sg, thus yielding the form *segi-∅*). This seems like a rather straightforward assumption since this affix would correspond to a specific form (unlike, for example, in English) and therefore it would provide the contrast necessary for learnability conditions (see Pinker 1984). The interesting question that seems to arise on this analysis is why this null affix should favour the first person position.

Like most Romance languages, Portuguese also allows pro-drop (from Speas 2004:26):

(10)   Vi   seu pai   quando passei
        saw-1sg your father when   passed-1sg
        'I saw your father when I passed by'

As has been often pointed out, however, pro-drop is not a feature of the Brazilian variety of Portuguese (Rohrbacher 1994:262):

(11)   *(Eu) vi   seu pai   quando *(eu) passei.
          I   saw-1sg your father when   I   passed-1sg
        'I saw your father when I passed by'

Given our formulation of richness, this is in fact expected since the Brazilian Portuguese paradigm does not realise full feature opposition, unlike the European counterpart (cf. (9)):

(12)   Brazilian Portuguese paradigm; Inf.: fal-ar ('to speak)

1sg	fal-**o**	+sp αad +sg	1pl	fal-**a**	αsp ßad γsg
2sg	fal-**a**	αsp ßad γsg	2pl	fal-**am**	-sp αad -sg
3sg	fal-**a**	αsp ßad γsg	3pl	fal-**am**	-sp αad -sg

The same point is further illustrated by Old English. In this language, the plural forms were all underspecified for the SPEAKER as well as the ADDRESSEE feature, as shown in (13) (from Nádasdy 1982):

(13)   Old English paradigm: Inf.: help-an ('to help')

1sg	help-e	+sp αad +sg	1pl	help-eÞ	αsp ßad -sg
2sg	hilp-st	-sp +ad +sg	2pl	help-eÞ	αsp ßad -sg
3sg	hilp-Þ	-sp -ad +sg	3pl	help-eÞ	αsp ßad -sg

Prima facie, the Old English paradigm may look poorer than the Icelandic one (cf. (8)). However, when looking at its feature specification we see that Old English did realise opposition for all three features, unlike Icelandic. Indeed, there is strong evidence that Old English allowed pro-drop (van Gelderen 2000:127/131, *Beowulf*):

(14)   a. namon þa   to rede
            took   then to council
            'They took then to council'

       b. þæt syðþan   na   ymb brotne ford   brimliðende lade   ne letton
            that since-then never on   broad water-way seafarers   passage not let
            'that they after that never kept people from passing that water'.

In some of the Old English texts analysed by Berndt (1956), the rate of subject omission was as high as 43%. Also, note that example (14b) involves dropping the subject of an embedded clause, indicating that it is not a case of topic-drop (cf. footnote 2). Many such examples were also reported in Pogatscher (1901), cited in van Gelderen 2000.

   Given our definition of richness, it is not surprising that Old English allowed pro-drop despite the fact that it failed to distinguish between SPEAKER and ADDRESSEE in the plural. This is because full feature opposition could still be realised by the presence of two separate values for SPEAKER and ADDRESSEE in the singular cases together with the realisation of a general *-sg* affix.

   However, this was no longer true in the Late Middle English period. By then, the infinitive and the plural affixes had converged, with consequent loss of opposition for the SINGULAR feature:

(15)   Middle English paradigm: Inf.: sing-en ('to sing')
         1sg   sing-**e**   +sp αad +sg   1pl   sing-**en**
         2sg   sing-**est**   -sp +ad +sg   2pl   sing-**en**
         3sg   sing-**eð**   -sp - ad +sg   3pl   sing-**en**

This leads us to expect that pro-drop should no longer have been allowed in Middle English. Though empirical knowledge in this area is limited, the situation seems promising.

   Among the Middle English texts recently analysed by van Gelderen (2000) there are two works that are of particular interest to our discussion, namely the *History of the Holy Rood Tree* (HRT) and a collection of texts known as the 'Katherine Group' (KG). These texts differ with regard to pro-drop in a manner which is crucial to the analysis I am proposing: while pro-drop occurs "relatively freely" (van Gelderen 2000:145) in the KG texts, there is no evidence of pro-drop in the HRT text. An example from the KG texts is given below:

(16)   Cleopest Þeo Þing godes…
        Call-2sg those things good
        "Do you call those things good?"

On further inspection, we find that – while the HRT variety conforms to the paradigm in (15) – the KG texts are a different matter as "[t]he Old English verbal system is remarkably well preserved in these texts" (Logan 1973:185). In particular, this variety still used "different vowel combinations with –Þ for the plural" (van Gelderen 2000:174) indicating that the *–sg* value was still being spelt out, with consequent realisation of opposition for the SINGULAR feature. It is thus unsurprising that this variety allowed pro-drop.

3.3 The Irish Paradigm

Modern Irish has been claimed to be problematic for morphological analyses that relate pro-drop to rich agreement systems at least since the work of McCloskey and Hale (1984). On the one hand, the Irish system does not seem to be particularly rich. As shown in (17), this language does not realise opposition for the ADDRESSEE feature:

(17)   Irish paradigm: Cond.: cuir-f ('put-COND')[8]

1sg	chuirf-**inn**	+sp αad +sg	1pl	chuirf-**imis**	+sp αad -sg
2sg	chuirf-**ea**	-sp +ad +sg	2pl	chuirf-**eadh**	-sp αad βasg
3sg	chuirf-**eadh**	-sp αad βsg	3pl	chuirf-**eadh**	-sp αad βsg

Assuming the definition of richness proposed in section 3.1 above, the prediction that follows is that Irish should not allow pro-drop. Nevertheless, claims to the contrary have often been made. Examples such as (18) have been cited in support of such claims (from McCloskey and Hale 1984):

(18)   Chuirfinn   isteach ar an   phot sin
        put-COND-1sg in   on that job
        'I would apply for that job"

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[8] As far as Irish is concerned, I will use the conditional paradigm instead of the present indicative since this is the only context in which pro-drop putatively occurs.

However, the conclusion that (18) is an instance of pro-drop seems too simplistic. Unlike the classic pro-drop languages, Irish has the property that agreement morphology must be absent when the subject is overtly realised. Compare the examples in (19) with (18) above:

(19)　　a. *Chuirfinn　　　mé isteach ar　an　phost sin
　　　　　　put-COND-1sg I　in　　　on that　job

　　　　　b. *Chuirfeadh isteach ar　an　phost sin
　　　　　　　put-COND in　　　on that job

　　　　　c. Chuirfeadh Eoghan isteach ar an　phost sin
　　　　　　put-COND Owen　in　　　on that job

Note that example (19a) is ungrammatical even in contrastive contexts. In order to build a contrastive reading in Irish a contrastive particle is attached to the verbal ending instead.

　The Irish elements have at least one other characteristic which is problematic for a pro-drop analysis. As shown in (20), they can occur in coordinated structures (from McCloskey and Hale 1984):

(20)　　dá mbe-inn　　−se　　　agus tu　−sa　　ann
　　　　if　be.cond-1sg −contr. and　you −contr. there
　　　　'if you an I were there'

This property is also found in Romance object clitics and is typically associated with syntactic rather than morphological elements (Zwicky 1977), a fact that should make us immediately suspicious as to the status of the Irish items. Unsurprisingly, structures like (20) are impossible in pro-drop languages, whether the verbal agreement refers to the silent pronoun or to the whole coordination:

(21)　　a. *Se io e　　parli/parliamo　　　　　　　　　　Italian
　　　　　　if　I　and speak-2sg/1pl

　　　　　b. *An ego ke milisis/milisume　　　　　　　　　Greek
　　　　　　if　I　　and speak-2sg/1pl
　　　　　　'if you and I speak'

What these data seem to suggest is that the Irish elements are not instances of morphological agreement at all. Indeed, those proposals that have tried to analyse the Irish data in terms of agreement (e.g. McCloskey and Hale 1984; Legate 1999) inevitably had to appeal to additional stipulations in order to capture the complementary distribution between pronouns and the alleged agreement morphemes. For this reason, a number of researchers have argued that the phenomenon found in Irish (and other Celtic languages) results from interface constraints that apply to the verb-subject sequence and have nothing to do with agreement or the licensing of empty pronouns (see Pranka 1983; Doron 1988; Ackema and Neeleman 2003 for cliticisation/allomorphy analyses). A major advantage of these proposals is that they provide a straightforward explanation for the complementarity shown in (18) and (19) since they take the two elements to be in an allomorphic relation which surfaces in specific circumstances. In particular, the analysis proposed by Ackema and Neeleman (2003) also captures the fact that this type of complementarity seems to be found only in OVS languages. The superior explanatory power of these proposals as opposed to agreement analyses indicates that the similarities which Irish seems to share with pro-drop languages are only superficial. In this respect, the intuition behind the label 'pro-drop' seems to be rather accurate; pro-drop languages are languages that drop-pronouns, not affixes. In conclusion, Irish is most probably not a pro-drop language and therefore it appears that the prediction stemming from the formal properties given in (17) is in fact borne out[9].

Though a wider range of languages may have to be considered in order to test this hypothesis further, we can conclude that the idea of feature opposition can provide us with a satisfactory definition of "richness". In the next section I will look at how this can shed some light on the relationship between pro-drop and V-to-I movement.

3.4 Explaining Koeneman and Neeleman's Generalisation

The feature binarity discussed in the previous sections has also been discussed in Koeneman (2000) with regard to V to I movement. He argues that V-to-I movement too is triggered by those agreement paradigms which are sufficiently rich to realise all three features: ADDRESSEE, SPEAKER, SINGULAR. This definition of richness, however, only requires that the three features be realised, regardless of whether the +/-

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[9] Therefore, the feature specifications that appear in (17) are carried by elements other than affixes. This is unsurprising since there seems to be no reason why Person and Number features should be exclusively associated with morphological agreement (cf. Koeneman 2000, see also (23) below).

distinction is also spelt out. If this is correct, an interesting corollary emerges: what is sufficiently rich for pro-drop will also be sufficiently rich for V-to-I. This follows if we consider that in order for a paradigm to realise full opposition it must necessarily realise all three features. Indeed, evidence of a near-correlation between V-to-I and pro-drop has often been given in the literature[10] (see, for example, Kayne 1991; Platzack and Holmberg 1989; Roberts 1993; among others).

In particular, Koeneman and Neeleman (2001) categorise languages in relation to a "scale of inflection" which suggests that pro-drop languages are a subset of V-to-I languages:

(22)   Scale of Inflection
       Poor   Middle Class   Rich
       No V to I / No pro-drop   V to I / No pro-drop   V to I / pro-drop

If the idea of feature opposition discussed above is correct, the generalisation in (22) can be explained: because the specification that allows pro-drop is a subset of the specification that triggers V-to-I movement, pro-drop languages will be a subset of the languages that display V-to-I. This seems to be an interesting side-effect of our definition of richness.

3.5 Opposition and Learnability

Naturally, the view I have presented here raises the question of why feature opposition should be an important property of natural languages. In particular, if lack of ambiguity is a desirable property, why do pro-drop languages not require realisation of a distinct morphological marker corresponding to each person (e.g. Italian cf. (6))? Though my answer to this is entirely speculative, I think that feature opposition as a formal distinction may be due to learnability conditions.

Assuming that it is important for language learners to establish whether or not their target language qualifies as rich, the question arises as to how this might be done. As far as I can see, there are only a limited number of possible cues which could trigger the setting of this property. One of these would be the presence of a paradigm that distinguishes between all six persons (cf. Italian in (6) above). Although this would

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[10] Some proposals, notably Rohrbacher (1999), claim that the same agreement paradigms are responsible for both V-to-I movement and pro-drop. However, additional stipulations are necessary in order to account for the fact that some V-to-I languages do not allow pro-drop (e.g. Icelandic, Yiddish).

make the wrong prediction for Portuguese (cf. (9)), it may seem the only viable strategy that would provide pro-drop languages with truly unambiguous paradigms. Given the assumption made in section 2.1 with regard to the nature of Person and Number features, however, this would be a rather arbitrary requirement as it appeals to a distinction which is not represented in the speakers' mind, namely 1st, 2nd and 3rd person. This hypothesis must therefore be rejected as incompatible with the theoretical framework within which we are working.

At this point, there are two more possibilities to consider. Although these *would* be compatible with feature binarity, I believe they must nonetheless be rejected. One idea would be that a cue for richness is the presence of all possible feature combinations in the target language. However, this seems empirically inadequate in more than one respect. Firstly, as we have seen in (6), a language like Italian is sufficiently rich to spell out six different person/number combinations but does not actually realise *all* possible combinations as it lacks the inclusive/exclusive distinction in the first person (unlike – for example – Arabic, cf. footnote 5).

Moreover, this view necessarily implies that realising all possible feature combinations is a fundamental property of natural language, independently of pro-drop. What makes pro-drop languages different would be that they express this property on the verb rather than pronominally. This seems to be untrue, as there are a number of languages which lack combinations of all features whether on the verb or otherwise. In Standard British English, for example, the combination -*sp, +ad, +sg* is altogether absent since the pronoun *you* does not spell out a singular/plural distinction. Though potentially ambiguous, utterances like 'you saw him' are not ill-formed. Note that, when looking at the pronominal system of English, we find that full feature opposition is indeed realised, despite the 2nd person ambiguity:

(23)   English pronominal paradigm
        1sg I   +sp αad +sg   1pl   we   +sp αad -sg
        2sg you   -sp +ad αsg   2pl   you   -sp +ad αasg
        3sg he/she   -sp -ad +sg   3pl   they -sp -ad -sg

This might imply that our proposal could be extended to a more general – perhaps universal – requirement which may be formulated as follows: full feature opposition *must* be lexically realised. This would be independent of whether a language does so via pronouns or verbal agreement. If this is correct, pro-drop is simply a label we use when the latter case applies.

A question that might arise in response to this is why is it that lack of ambiguity holds at the lexical level rather than at the level of the utterance. In other words, why

is it that a system would require paradigms to be formally unambiguous when it is clear that no such requirement holds for some individual members of the paradigm (e.g. English *you*, Portuguese *-am*). Unfortunately, I do not have an answer to this but I suspect it may be related to some "minimal content" requirement that holds at the syntax/pragmatics interface. Very simplistically, ambiguity may be resolved by pragmatics provided that some formal content is provided upon which the speaker/hearer's expectations and mutual knowledge can be grafted. This may stem from the need to optimise computational effort which, in the absence of a minimal formal content, would perhaps be too great (indeed, it is difficult to imagine how a language with neither pronouns nor verbal agreement would be able to cope). In essence, what I am proposing is that this minimal formal content takes the shape of full feature opposition[11].

The last possibility I will only consider briefly, as it suffers from the same empirical inadequacy as the one just mentioned despite its appealing to a less strict requirement. Such requirement would be the need to specify all occurrences of all Person/Number properties (i.e. SPEAKER, ADDRESSEE, SINGULAR). This is a looser requirement as it only expects specification *iff* a feature is present. Nevertheless, it does not provide a solution as it still disallows pro-drop languages to lack the same inclusive/exclusive distinction discussed above and it would predict that the ambiguity associated with English *you* should not exist.

Therefore, it seems that – among the linguistically definable candidates that could encode the idea of richness/feature strength – feature opposition is the only one that does not immediately fail on empirical adequacy.

4 Conclusions

In this paper I have proposed a general definition of morphological richness with regard to verbal paradigms. The main claim of the paper is that richness is encoded at the level of morphological specification via spell-out of what I have been calling feature opposition. Languages whose morphology distinguishes between a positive and a negative setting for the features SPEAKER, ADDRESSE and SINGULAR qualify as morphologically rich while other languages do not. Although a wider range of languages needs to be examined before this definition might be considered as a possible universal, it provides a straightforward solution to traditionally recalcitrant

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[11] I suspect that a similar intuition lies behind Rohrbacher's idea of "minimal distinctive marking", though our proposals differ radically in other respects.

cases such as German and Icelandic, as well as the different pro-drop status of Brazilian as opposed to European Portuguese.

I have also shown how this definition might shed light on the near correlation between pro-drop and V-to-I movement.

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