

Case Morphology and Radical Pro Drop

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1. The problem

The generalization that pro drop is conditioned by rich agreement allows for a very attractive theory that reduces variation in the syntax to variation in the lexicon. The central idea is that languages allow pro drop to the extent that their verbal agreement paradigm expresses the ϕ -features necessary for local recovery of the content of dropped arguments (see Taraldsen 1978, Rizzi 1986 among others). The generalization is mainly based on European languages. Richly inflected languages like Italian, Spanish and Greek allow subject drop, but English, Dutch and Swedish, which are poorly inflected, do not.

An agreement-based theory of pro drop faces difficulties with languages like Japanese and Chinese, which lack agreement and nevertheless allow pro drop. In fact, pro drop in these languages seems to be more wide-spread than in Italian-type languages: (almost) any pronominal argument can be omitted. The literature refers to this phenomenon as ‘radical pro drop’, ‘rampant pro drop’, or, perhaps most frequently, ‘discourse pro drop’. It is illustrated below (Chinese data from Huang 1984: 533, 563):

- (1) a. \emptyset siken-ni otita. Japanese
exam-DAT failed
‘*pro* failed the exam.’
b. Bill-ga \emptyset setokusuru
Bill-NOM persuade
‘Bill persuaded *pro*.’
c. [\emptyset mimi-ga] naga-i
ear-NOM long-PRES
‘*pro*’s ears are long.’
- (2) a. \emptyset kanjian ta le. Chinese
see he LE
‘*pro* saw him.’
b. Ta kanjian \emptyset le.
he see LE
‘He saw *pro*.’
c. Zhangsan, [\emptyset baba] hen youqian.
Zhangsan father very rich
‘Zhangsan, *pro*’s father is very rich.’

One possible reaction to these data is to give up on any connection between pro drop and agreement. But such a move would amount to abandoning what insight we have into the phenomenon in favour of descriptivism. It is more desirable to develop a theory that

maintains the agreement-based account where it seems relevant, but allows pro drop in the absence of agreement under certain well-defined circumstances. We propose such a theory in sections 2-4. What sets apart our proposal from competing theories (Huang 1984; Speas 2004; Tomioka 2003) is that it focuses on the pronominal paradigm. Our main claim is that a language will only allow radical pro drop if its personal pronouns are agglutinating for case, number, or some other nominal feature. So, the morphological characteristics of the pronominal paradigm determine whether radical pro drop is allowed. In languages that do not have an agglutinative pronominal paradigm, omission of pronouns is possible, but only in the presence of rich verbal agreement. The proposal thus extends the original idea that variation in the lexicon may determine variation in the syntax.

Our proposal does not address the pragmatic conditions under which pro drop can take place in discourse. Rather we intend to find out what grammatical characteristics make radical pro drop available, and what typological predictions can be derived from these. A full theory of pro drop requires an additional pragmatic component that governs the use of null pronouns in languages whose grammar allows them. There are many proposals in the literature that deal with this aspect of radical pro drop, but evaluating these is beyond the scope of this paper.

2. Radical pro drop as a spell-out phenomenon

2.1. The generalizations

Let us now explore the idea that the possibility of radical pro drop in a given language is dependent on the nature of its pronominal paradigm. We believe that the following generalization provides a good approximation of the cross-linguistic distribution of radical pro drop. A language may drop pronouns if its pronouns either do not vary for case or, if they do vary, case morphology is agglutinating. The two options are exemplified by Chinese and Japanese. Chinese is a language with invariant pronouns. As the example in (3) illustrates, the nominative and accusative forms of the third person, singular, masculine pronoun are identical (see Huang 1984: 533).

- (3) Ta kanjian ta le. Chinese
he see he LE
'He saw him.'

Japanese pronouns that do inflect for case, but the inflection is clearly separate from the pronominal stem. In other words, the case morphology on pronouns is agglutinative rather than fusional. This is illustrated in (4).

- (4) Kare-ga kare-o setokusuru. Japanese
he-NOM he-ACC persuade
'He persuades him.'

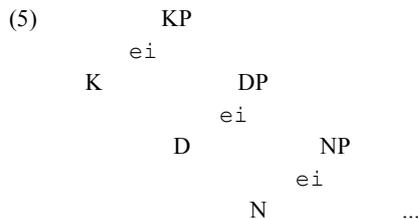
In contrast, languages in which case on pronouns is fusional do not allow radical pro drop. This is clearly the case in English (as *he saw him / she saw her* shows). Hence English pronouns cannot be omitted. The same is true of Italian. The fact that Italian pronouns

have fusional case morphology blocks radical pro drop, with the consequence that omission of arguments is restricted to contexts where it is licensed by agreement.

We argue that the correlation between the morphology of pronouns and the availability of radical pro drop derives from three independently motivated assumptions. First, as originally argued by Perlmutter (1971) and more recently by Holmberg (2005), null arguments are regular pronouns that fail to be spelled out at PF, rather than special silent lexical items, *pro*. Second, as argued by Weerman and Evers-Vermeul (2002), the spell-out rules for pronouns often target non-terminal nodes, rather than terminals (see also Pannemann and Weerman (2005). Finally, competition between different spell-out rules is regulated by the elsewhere condition (see Kiparsky 1973, and subsequent work). We will discuss these assumptions below.

2.2. Pronominal spell-out

We start by discussing the nature of spell-out rules for pronouns. For concreteness' sake, we assume that the extended nominal projection consists of an NP, dominated by a DP, which is in turn dominated by a KP (or Case Phrase). The hypothesis that there is a DP goes back to Abney 1987, and has been widely adopted. Motivation for KP can be found in Bittner & Hale 1996 and Neeleman & Weerman 1999, amongst others. It is conceivable that there is some cross-linguistic variation in the make-up of the extended nominal projection, but we take KP and NP to be universal.



There is general agreement that in an ordinary referential noun phrase like *the old man* the phonological units *the*, *old* and *man* correspond to terminal nodes. In theories that have *en bloc* lexical insertion of semantic, syntactic and phonological material, this is the only possibility. Phonological units cannot be associated with non-terminal nodes. This is different in theories based on 'late spell-out' (see Sproat 1985, Halle and Marantz 1993, Jackendoff 1997, and many others). In such theories, syntactic terminals do not contain phonological information; rather, syntactic representations are associated with phonological material in a mapping procedure at the PF interface. They therefore allow spell-out of terminal nodes, as well as larger chunks of structure.

In a recent paper, Weerman and Evers-Vermeul (2002) argue that pronouns very often correspond to larger chunks of structure than D or N. The evidence they provide is partly based on the distribution of Dutch possessive pronouns. As (6a) shows, regular possessive pronouns realize D: the pronoun *mijn* 'my' is in complementary distribution with the determiner *de* 'the', but not with any other material that can normally appear in the extended nominal projection. A second type of possessive pronoun, given in (6b) has a distribution that suggests that it spells out NP, while a third colloquial variant spells out DP or KP, see (6c).¹

- (6) a. **Mijn_D** mooie boek is gestolen. Dutch
my beautiful book is stolen
 ‘My beautiful book has been stolen.’
 b. De **mijne_{NP}** is gestolen.
the mine is stolen
 ‘Mine is been stolen.’
 c. **Mijnes_{DP/KP}** is gestolen.
mine is stolen
 ‘Mine has been stolen.’

Weerman and Evers-Vermeul suggest that personal pronouns like *hem* ‘him’ correspond to KPs. They cannot be combined with any other material normally hosted by DP, and they vary in form depending on their case:

- (7) Hij heeft **hem_{KP}** gisteren nog gezien. Dutch
He have him yesterday still seen
 ‘He saw him only yesterday.’

If personal pronouns indeed spell out non-terminal categories, the pronominal paradigm consists of a set of spell-out rules that distinguish between KPs on the basis of their phi-feature composition. For example, *hem* is introduced by the spell-out rule in (8).²

- (8) [_{KP} +p, -a, 3SG, MASC, ACC] ⇔ /hem/

Of course, the idea that pronouns stand for complete nominal phrases is quite intuitive, and was part of traditional as well as early generative grammar. However, it is not uncontroversial. Since Postal 1966, personal pronouns have been analysed as occupying the D-position. The main evidence for this is based on expressions like *us guys*, in which a pronoun seems to take an NP complement. However, various linguists have argued that this conclusion is incorrect, and that the relation between *us* and *guys* is more like apposition than like complementation. (See Bhat (2004:50-52) for an overview.)

2.3. Radical pro drop as zero spell out of regular pronouns

Given our emphasis on spell-out, a natural way of analyzing pro drop is to assume that null arguments are regular pronouns in syntax that fail to be realized at the PF interface. Thus, radical pro drop languages would be the result of application of the spell-out rule in (9), which is formulated in such a way that it cannot affect non-nominal arguments, adjuncts, or reflexives.

- (9) [_{KP} +p, -a] ⇔ ∅

Note that the claim that pro drop is zero spell-out of regular pronouns does not imply that overt and covert pronouns are identical in all respects. There is an obvious phonological

difference. Therefore, where a pronoun cannot be destressed, it can also not be dropped. Focused pronouns consequently resist omission, as do pronouns coordinated with some other category. What circumstances require phonological realisation of a pronominal is a matter of debate, but it is clear that under the present proposal contrasts between overt and covert pronouns must be attributed to pragmatic considerations.

2.4. *The elsewhere condition*

The elsewhere condition was introduced into generative grammar by Kiparsky (1973), although it has a rich history predating the Chomskyan turn. It can be formulated as follows:

- (10) 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 elsewhere condition has three consequences for the phonological realization of syntactic structure:

- (11) a. All else being equal, a phonological realization of a category C takes priority over a phonological realization of the categories contained in C .
b. All else being equal, a phonological realization of a category C that spells out more of C 's features takes priority over phonological realization that spells out fewer features.
c. Optionality results if the phonological realization of a category C spells out fewer of C 's features than the phonological realization of the categories contained in C .

The validity of (11a) can be demonstrated using English irregular verbs. The irregular form *went*, for example, blocks the regular form *go-ed* because it realizes a higher level category, and is consequently inserted by a more specific spell-out rule. The effects of (11b) can be observed in almost any inflectional paradigm. For example, German second person singular agreement could either be spelled out using the default third person singular ending or the first person singular ending. Both arguably are compatible with the feature content of the second person singular (see Harley and Ritter 2002). The fact that the second person singular form is used reveals a preference for spell out rules that realize the maximum number of features present in syntax. The statement in (11c) must hold because the elsewhere condition cannot choose between rules whose structural descriptions overlap only partially.

3. Why radical pro drop is sensitive to the morphology of pronouns

We now return to the question at the heart of this paper: what determines the cross-linguistic distribution of radical pro-drop. As a result of the elsewhere condition, the general zero spell-out rule in (9) would be blocked by more specific spell-out rules that

realize a KP with particular case and phi-features, such as (8). (We repeat these rules below.)

- (8) $[\text{KP } +\text{p}, -\text{a}, 3\text{SG}, \text{MASC}, \text{ACC}] \Leftrightarrow / \text{hem} /$
 (9) $[\text{KP } +\text{p}, -\text{a}] \Leftrightarrow \emptyset$

This means that in languages whose pronominal paradigm consists of spell-out rules for KP, a general pro drop rule would not have any effect. Its application would be systematically suppressed by the more specific spell-out rules that introduce overt pronouns.

This does not mean that such languages necessarily lack pro drop altogether. A context-sensitive spell-out rule could legitimately give rise to zero arguments. Consider a rule that mentions agreement (indicated by co-indexation with an element in the structural description of the rule):³

- (12) $[\text{KP } +\text{p}, -\text{a}, \phi_i] \Leftrightarrow \emptyset / \text{---} [\phi_i]$

The rule in (12) is not in an elsewhere relation with the rules that make up the (overt) pronominal paradigm. In order to see this, compare it with (8). The context-sensitive rule is more specific in one sense: it mentions agreement, while the context-free rule does not. On the other hand, a context-free rule like (8) is more specific in that it mentions particular phi-features, which (12) does not. This means that a spell-out rule for an overt pronoun and the context-sensitive pro-drop rule are not in an elsewhere relation: their domains of application are not in a subset-superset relation. Consequently, neither rule blocks the other: languages with fusional pronominal paradigms cannot have radical pro drop, but they can have pro drop in the context of rich agreement.

The reason why radical pro drop is blocked in languages with fusional pronominal paradigms is that the relevant spell-out rules all apply to the same category, KP:

- (13)
- | | | | | |
|--|---|-------------------------------------|---|--|
| target of spell-out
rules for pronouns (8)
and context-sensitive
pro-drop rule (12) | → | KP
e _i
K
D
N | ← | target of radical
pro-drop rule (9)
DP
NP
N
... |
| | | e _i
e _i | | |

In order for a general zero spell-out rule like (9) to have an effect, the language in question cannot have other spell-out rules for pronominal KPs. Consider what happens if the rules that express the pronominal paradigm target lower-level categories, such as K and DP or NP:

- (18) a. wǒ-men-∅ Chinese
 I-PL-CASE
 ‘we/us’
 b. wǒ-de
 I-POSS
 ‘my/mine’

If analyzed along these lines, the situation in Chinese is formally indistinct from that in Japanese. Chinese should therefore allow radical pro drop. This is, of course, correct (see (2)).

For languages with an invariant pronominal paradigm, there is a second possibility. Their pronouns could in principle target KP. Hence, languages with invariant pronouns may or may not be radical pro drop languages. This seems to be correct. Jamaican Creole, for example, has invariant pronouns and does not allow radical pro drop:

- (19) [KP +p, -a, 1sg] ⇔ /mi/ [KP +p, -a, 1pl] ⇔ /wi/ Jamaican Creole
 [KP +p, -a, 2sg] ⇔ /yu/ [KP +p, -a, 2pl] ⇔ /unu/
 [KP +p, -a, 3sg] ⇔ /im/ [KP +p, -a, 3pl] ⇔ /dem/
 [KP +p, -a, 3sg, neut] ⇔ /i/
- (20) a. *(Mi) a rait. Jamaican Creole
I am write
 ‘I’m writing.’
 b. Nobadi neva sii *(im).
nobody never see he
 ‘Nobody ever saw him.’
 c. Dem so fiesty in *(dem) ways.
they so fiesty in they ways
 ‘They were so feisty in their ways.’

An important question is what properties of a language with invariant pronouns determines whether it has empty case markers (like Chinese), or ‘fusional’ invariant pronouns (like Jamaican Creole). We cannot discuss this issue here due to lack of space, but a concrete proposal can be found in Neeleman & Szendrői 2005, *to appear*.

5. Typological range of the proposal

The typological predictions of our proposal can be summarized as follows. First, in languages with pronouns that are fusional for case, like English, radical pro drop should be impossible. This is because the spell-out rules corresponding to the overt pronominal forms will block the zero spell-out rule, as they realize more features. Second, in languages where case is expressed in a morpheme that is independent from the stem, as in Japanese, we predict that radical pro drop is possible. The zero spell-out rule that gives rise to radical pro drop is not blocked by the spell-out rules for overt pronouns, as the latter realize lower-level categories (say, NP rather than KP). Third, in languages whose pronouns are invariant for case there are two options. They may be analyzed as having

zero case affixes (as suggested for Chinese), in which case radical pro drop is possible. Alternatively, their pronouns can be analyzed as ‘fusional’, in which case radical pro drop is blocked.

In earlier work on the cross-linguistic distribution of radical pro drop, we argued that it is easy to find examples of the four types of languages allowed by our theory, while the class of languages with fusional pronouns and radical pro drop is empty. The languages we discussed are enumerated in (21); explicit paradigms and sources are given in Neeleman & Szendrői *to appear*, where we also discuss why some languages with invariant pronouns fall under (21c), while others fall under (21d).⁴ Here, we will simply concentrate on the main prediction of our proposal: the claim that there are no languages of type (21e); that is, languages that combine fusional pronouns with radical pro drop.

- (21)
- a. *Fusional pronouns, no radical pro drop*
Afrikaans, Dutch, English, Greek, Italian, Pashto, Swedish.
 - b. *Agglutinative for case, radical pro drop*
Assamese, Burmese, Hindi/Urdu, Japanese, Korean, Turkish
 - c. *Invariant for case, radical pro drop*
Cheke Holo, Chinese, Kokota
 - d. *Invariant for case, no radical pro drop*
Jamaican Creole, Papiamentu, Tok Pisin
 - e. *Fusional pronouns, radical pro drop*
<empty>

Note that the languages that have radical pro drop come from different language families. Assamese and Hindi/Urdu are Indo-Aryan languages; Chinese and Burmese are Sino-Tibetan; Cheke Holo and Kokota are Oceanic (Eastern Malayo-Polynesian) and so on. At first sight, it seems that the languages that do not have radical pro drop belong to two classes: they are either Creoles or non-Indic Indo-European. This is an artifact of our sample, however. To begin with, Pashto does not fit very well with this classification (it is Iranian, Indo-European). Moreover, Haida, a native American language spoken in Alaska, has obligatory subject pronouns, like English. The paradigm in (22) shows that Haida pronouns are fusional (The strong pronouns are frequently accompanied by a focus marker, but given that focus markers are external to case, this is not sufficient to warrant pro drop).

(22) Haida pronouns:

	AGENT (strong/weak)	PATIENT (strong/weak)
1SG	hláa/hl	díi
2SG	dáa/dáng	dáng
3SG		'láa/hal
1PL	t'aláng	íitl'
2PL		daláng
3PL		t'áa/tl'

The sample of languages we have used so far to test our proposal is limited. However, given the nature of the claim we are defending it is possible to use typological databases to enlarge the empirical grounding of the generalization central to our claim. Such databases might guide us in our endeavor to find languages that are potential counterexamples. Further analysis would then have to determine whether the languages in question are actual counterexamples.

There is one database that seems particularly useful, namely the *World Atlas of Language Structures* (WALS; Haspelmath et al. 2005). The WALS is a large database of structural properties of languages gathered from a wide range of descriptive sources. It consists of maps with accompanying texts on diverse grammatical features. Each map shows between 120 and 1110 languages. Crucially for our present purposes, the WALS is accompanied by a searchable CD-rom, allowing the user to combine different maps. The type of language that our proposal excludes has fusional pronouns but allows radical pro drop. We can find languages that potentially fall into this group by combining two maps. The first identifies languages that allow subject omission in the absence of verb-subject agreement; the second identifies languages with independent subject pronouns whose plural is expressed by unanalysable person-number stems (at least in the 1st and 2nd person plural). For example, in Dogon (a Niger-Congo language spoken in Mali), we get the forms *mi* 'I', *emme* 'we', *u* 'you.sg' and *e* 'you.pl'. The combination of these two properties gives us languages that may have radical pro drop (depending on the generality of argument omission) and that may have fusional pronouns (depending on whether the potential fusional nature of number marking extends to case).

The combination of the two relevant maps yields the following languages:

- (23) Epena Pedee; Garo; Guugu Yimidhirr; Kayah Li (Eastern); Khmu'; Lezgian; Maybrat; Thai; Yidiθ; Yoruba.

To begin with, we can remove from this list of potential counterexamples those languages that cannot be classified as allowing radical pro drop. In Yoruba, for instance, the only context in which a subject can be omitted is when a third person singular pronoun occurs before the negation marker *kò* or the future tense marker *yó* (Bamgbose 1967:42). This constraint on subject omission implies that Yoruba does not have radical pro drop. Kayah Li is not a language that has been studied intensively, but the information available to us does not suggest that it allows free omission of pronouns either (see Solnit 1986, 1997). We did not manage to amass sufficient information about Khmu' to determine whether it is radical pro drop or not, and will therefore have to put this language to one side. The remaining languages are given in (24).

- (24) Epena Pedee; Garo; Guugu Yimidhirr; Lezgian; Maybrat; Thai; Yidiθ.

According to our proposal, radical pro drop is allowed in languages that have pronouns with agglutinative case morphology, and therefore such languages must be removed from the list as well. We already know that Burmese has agglutinative case markers (see (21b)). The same is true of Epena Pedee (see Harms 1994: 58), Garo (see Burling 2003), Lezgian (see Haspelmath 1993: 184) and Yidiθ (Dixon 1977:168; Martin Haspelmath p.c.). To give some examples, we find forms like (25a) in Epena Pedee (from Harms 1994: 186) and forms like (25b) in Garo (from Burling 2003).

- (25) a. mi-a
 1sg-erg
 b. ching-ko
 2sg-acc

We are not confident of the correct analysis of Guugu Yimidhirr pronouns. Guugu Yimidhirr is an Australian language, and so, as expected, it has a large set of agglutinating case markers. Dixon and Blake (1979:6) state that the Australian languages ‘seldom exhibit morphophonemic alternations that obscure the agglutinative character of words; there is little fusion of any kind and little suppletion (as in English *I/me* or *go/went* for instance)’. This would suggest that Guugu Yimidhirr is no different from Epena Pedee or Garo. But there are some complications in the Guugu Yimidhirr pronominal paradigm. A good overview of the various pronominal forms is given in Haviland (1979: 65-66). In the table below we give a simplified version of the paradigm, abstracting away from regional variation, amongst several other things.

(26) Guugu Yimidhirr pronouns (simplified):

	NOM	ACC	DAT	PURP	ABES	ADES
1SG	ngayu	nganh-i	ngadh-u	ngadh-un- ngu	ngadh-un- ga	ngadh-un- gal
2SG	nyundu	nhina-in	nhan-u	nhan-un- ngu	nhan-un- ga	nhan-un- gal
3SG	nyulu	nhinhaan- in	nhang-u	nhang-un- ngu	nhang-un- ga	nhang-un- gal
1DU IN	ngali	ngali-in		ngali-in- ngu	ngali-in- ga	ngali-in- gal
1DU EX	ngaliinh	ngalinh-un		ngalinh-un- ngu	ngalinh-un- ga	ngalinh-un- gal
1PL	ngana	nganang-an		nganang-an- ngu	nganang-an- ga	nganang-an- gal
2DU	yubaal	yubal-in		yubal-in- ngu	yubal-in- ga	yubal-in- gal
2PL	yurra	yurra-an		yurra-an- ngu	yurra-an- ga	yurra-an- gal
3DU	bula	bulang-an		bulang-an- ngu	bulang-an- ga	bulang-an- gal
3PL	dhana	dhana-an		dhana-an- ngu	dhana-an- ga	dhana-an- gal

As (26) shows, all non-singular pronouns exhibit perfectly regular non-cumulative agglutinating morphology for all cases: nominative is the unmarked form, there is an accusative/dative form marked by *-in/-an/-un*, and three oblique cases derived from the accusative/dative by attachment of *-ngu*, *-ga* and *-gal*, respectively.

The singular is more complex. To begin with, accusative and dative forms are distinguished: the former are marked by *-i/-in*; the latter by *-u*. The oblique cases are derived from an allomorph of the dative forms (ending in *-un*, rather than *-u*). Again, from the dative onward, the singular paradigm shows perfectly regular non-cumulative agglutinating morphology. The nominative and accusative singular forms are puzzling, though, and in order to extend the analysis of Guugu Yimidhrr pronouns as agglutinating, one must assume that singular stems have three allomorphs: a nominative, an accusative and a dative one. It seems to us that this would be a reasonable assumption for the child to make, given that the paradigm is overwhelmingly regular. But needless to say, more work would be required to determine whether this idealized description of Guugu Yimidhrr pronouns is correct.

If we are allowed to remove Guugu Yimidhrr from the list in (24) on the basis of the above considerations, two languages remain:

(27) Maybrat; Thai.

Maybrat is arguably a radical pro drop language. Dol (1999:160) states that subjects and objects may 'be omitted if they have been mentioned in earlier in the discourse.' The Maybrat pronominal paradigm is given in (28). It is clear that the possessive forms are formed agglutinatively, while pronouns are otherwise invariant for case. Radical pro drop in a language with a paradigm of this type is consistent with our hypothesis.

(28) Maybrat pronouns:

	UNMARKED	POSSESSIVE
1SG	tuo	ro-tuo/a-tuo
2SG	nuo	ro-nuo/a-nuo
3SG	au	r-au
3SG MSC	ait	r-ait
1PL	amu	r-amu
2PL	anu	r-anu
3PL	ana	r-ana

Thai is also a radical pro drop language whose pronouns do not express case (see Cooke 1968 and Campbell 1969). So Thai, like Maybrat, does not constitute a counterexample to the generalization that radical pro drop is restricted to languages whose pronouns are either agglutinating or invariant for case.

6. Concluding remarks

To summarize, we argued that the cross-linguistic distribution of radical pro drop can be captured if three assumptions are made: (i) pro drop results from zero spell-out of regular pronouns; (ii) spell-out rules may mention non-terminal categories as their input; and (iii) spell-out is regulated by the elsewhere condition. From these assumptions, it follows that no language with fusional pronominal morphology may have radical pro drop. In earlier work, we checked this prediction using a small sample of languages. Here, we extended

the empirical domain of the proposal by exploring languages identified as potential counterexamples by the WALS. As it turns out, the typology we established earlier is consistent with what appears to be the case in these additional languages. We can identify four groups of languages, with the fifth group (fusional pronoun morphology and radical pro drop) empty, as predicted:

- (29) a. *Fusional pronouns, no radical pro drop*
Afrikaans, Dutch, English, Greek, Haida, Italian, Kayah Li, Pashto, Swedish, Yoruba.
- b. *Agglutinative for case, radical pro drop*
Assamese, Burmese, Epena Padee, Garo, Guugu Yimidhirr, Hindi/Urdu, Japanese, Korean, Lezgian, Turkish, Yidin
- c. *Invariant for case, radical pro drop*
Cheke Holo, Chinese, Kokota, Maybrat, Thai
- d. *Invariant for case, no radical pro drop*
Jamaican Creole, Papiamentu, Tok Pisin
- e. *Fusional pronouns, radical pro drop*
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As mentioned several times above, one question that remains is what factor determines whether a language with invariant pronouns belongs to class (29c) or to class (29d). This issue is addressed in Neeleman and Szendrői *to appear*, including a more in depth study of Maybrat and Thai.

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¹ A reviewer suggests an alternative account for the distribution of Dutch pronouns involving head movement. In this view, pronouns would be N or D-heads and move up to D or K. The problem with this analysis is that it predicts that nominal modifiers could appear alongised the pronouns, or be stranded inside the NP by the moved head (Weerman and Evers-Vermeul 2002: 314). But as is clear from (i) this is not the case.

- (i) a. *<sub>[DP De _[NP mooie mijne_N]]is gestolen. Dutch
the beautiful mine is stolen
 ‘My beautiful one has been stolen.’</sub>
- b. *<sub>[DP Mijnes_N _[NP mooie t_N]] is gestolen.
mine beautiful is stolen
 ‘My beautiful one has been stolen.’</sub>
- c. *Hij heeft <sub>[KP hem_N _{[DP t_N _[NP mooie t_N]]]}gisteren nog gezien.
He have him beautiful yesterday still seen
 ‘He saw him, the beautiful one, only yesterday.’</sub>

² We use the familiar features [+p(ronominal), –a(naphoric)] to indicate that KP is a pronoun. We are not committed to these particular features. What is important for us is that pronouns can be distinguished from other nominal categories, such as R-expressions and anaphors.

³ It is often claimed that the richer the agreement, the greater the likelihood of context-sensitive pro drop (see Ackema et al. *to appear* for an overview). In our proposal, this correlation must either be explained on functional grounds, or in terms of the theory of context-sensitive spell-out rules, or a combination of these. We cannot go into this issue here, and will simply take for granted the relevance of rich agreement for context-sensitive pro drop.

⁴ A reviewer brings to our attention an interesting case. Brazilian Portuguese is not a radical pro drop language, although at least at first sight it seems to exhibit some agglutinating morphology: see the –s endings in the 2nd and 3rd persons plural forms in (i). The idea that –s expresses number is an appealing one, especially that –s is the plural marker in the language in general. However, note that most of the accusative forms are not derivable from the nominative ones. So, the –s ending on the accusative forms, is in

fact external to case. Given that number marking is always internal to case marking (Greenberg 1963: 95), we speculate that the *-s* ending is not a regular number marking morpheme, but rather the pronominal forms are spelt-out the same irrespective of whether they are singular or plural and an additional *-s* morpheme is added externally to case at the spellout for the plural forms. This is similar to a case of multiple exponence in the case of Greek strong pronouns, where an additional support morpheme is added onto the case-marked forms at spellout (see Neeleman and Szendrői *to appear*).

(i) Brazilian Portuguese pronouns:

	NOMINATIVE	ACCUSATIVE
1SG	eu	me
2SG	tu (NBr, NEBr) você/ cê (SBr)	te
3SG MSC	ele	o/ lo
3SG FEM	ela	a/ la
1PL	nós/ a gente	nos/ a gente
2PL	vocês/ cês /(vós)	vocês/ cês /(vos)
3PL MSC	eles	os/ los
3PL FEM	elas	as/ las