Pro Drop and Pronouns

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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: 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. ∅ siken-ni otita.   Japanese
         exam-DAT *failed*
         '*pro* failed the exam.'
     b. Bill-ga ∅ setokusuru
         Bill-NOM *persuade*
         'Bill persuaded *pro*.'
     c. [∅ mimi-ga] naga-i
         ear-NOM long-PRES
         '*pro*'s ears are long.'

(2) a. ∅ kanjian ta le.   Chinese
         see he LE
         '*pro* saw him.'
     b. Ta kanjian ∅ le.
         he see LE
         'He saw *pro*.'
     c. Zhangsan, [∅ 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 the 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* 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 conditioned 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 (2004), 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 target non-terminal nodes, rather than terminals. Finally, potential competition between different spell-out rules is regulated by the elsewhere principle (see Kiparsky 1973, and subsequent work). We will discuss these assumptions below.

2.2. Pronominal spell-out

Let us 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.

(5)

```
            KP
         /      \
        K        DP
              /      \
             D        NP
                    /    \
                   N      ...
```
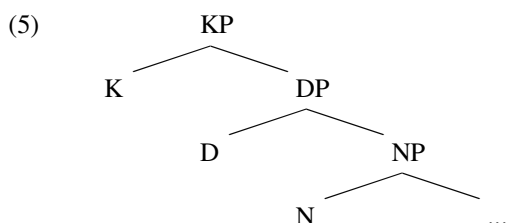
There is general agreement that in an ordinary referential noun phrase like *the old man* the phonological units *the*, *old* and *man* correspond to terminal nodes. In theories that have *en bloc* lexical insertion of semantic, syntactic and phonological material, this is the only possibility. Phonological 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).

(6) a. **Mijn$_D$** mooie boek is gestolen.   Dutch
         my beautiful book is stolen Mijn *spells out D*
         '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 heb **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).[1]

(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,

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[1] 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.

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 have the spell-out rule in (9).

(9) $[_{KP} +p, -a] \Leftrightarrow \varnothing$

The way the rule in (9) is formulated is meant to capture the fact that pro drop cannot affect non-nominal arguments, adjuncts, or reflexives. The evidence showing that reflexives cannot be dropped is very simple; *zibun* 'self' cannot be omitted in (10). It requires more space to show that non-nominal arguments and adjuncts do not permit pro drop, and we will therefore refrain from doing so here.

(10)   Taroo-ga *(zibun-o) semeta.   Japanese
         Taro-NOM self-ACC blamed
         'Taro blamed himself.'

It has been observed that omitted arguments sometimes behave like regular NPs, rather than pronouns. In Japanese, structures like (11b) are ambiguous. The strict reading is unproblematic, but the sloppy reading seems to require an empty category with more internal structure than a deleted pronoun would have. In particular, it requires that the elided category contains a covert possessor. But pronouns, whether overt or covert, do not have possessors.

(11)   a.   Mary-wa zibun-no kuruma-o aratta.Japanese
                 Mary-TOP self-GEN car-ACC washed
                 'Mary washed her car.'
         b.   John mo $\varnothing$ aratta.
                 John also washed
                 (i)   'John washed Mary's car too.' (strict)
                 (ii)   'John washed John's car too.' (sloppy)

If examples like (11b) involve pro drop, the availability of the sloppy reading would falsify an account of pro drop as zero spell out of regular pronouns. However, it can be argued that such examples do *not* involve pro drop. Whitman and Moriyama (2004) argue convincingly that the sloppy reading of (11b) must be derived by ellipsis of a nominal category. Crucially, null arguments can only get a sloppy interpretation if some kind of parallelism constraint is met. For instance, if the example in (11a) is followed by a non-parallel structure, as in (12), only the strict reading is available. Sensitivity to parallelism is of course typical of ellipsis, not pro drop.

(12)   Atode John-wa $\varnothing$ notta.   Japanese
         Afterwards John-TOP rode
         (i)   'Afterwards, John rode in Mary's car.' (strict)
         (ii)   *'Afterwards, John rode in John's car.' (sloppy)

The fact that a sloppy reading is excluded where ellipsis is not possible suggests that pro drop should be analyzed as zero spell out of regular pronouns. After all, overt pronouns also allow sloppy readings in the relevant contexts.

     Note that the claim that pro drop is deletion 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. Focussed 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 principle

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

(13)   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 principle has three consequences for the phonological realization of syntactic structure:

(14)   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 a category C spells out fewer of C's features than the phonological realization of the categories contained in C.

The validity of (14a) can be demonstrated using English irregular verbs. The irregular form *went*, for example, blocks the regular from *go-ed* because it realizes a higher level category, and is consequently inserted by a more specific spell-out rule. The effects of (14b) 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 (14c) must hold because the elsewhere principle 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 principle, 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) $[_{KP} +p, -a, 3SG, MASC, ACC] \Leftrightarrow$ /hem/
(9) $[_{KP} +p, -a] \Leftrightarrow \varnothing$

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.
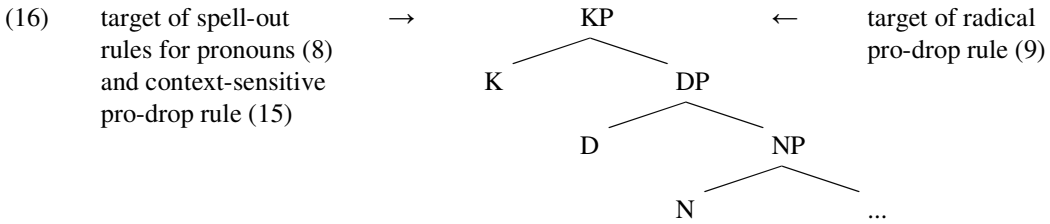
    This does not mean that such languages necessarily lack pro drop altogether. A context-sensitive spell-out rule could legitimately give rise to zero arguments. Consider a rule that mentions agreement (indicated by co-indexation with an element in the structural description of the rule):[2]

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[2] 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.
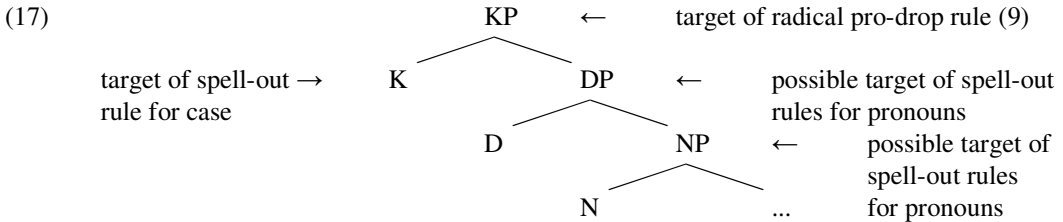
(15) $[_{KP} +p, -a, \phi_i] \Leftrightarrow \varnothing \, / \, \_\_\_ \, [\phi_i]$

The rule in (15) 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 (15) 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:

(16)   target of spell-out $\rightarrow$ KP $\leftarrow$ target of radical
         rules for pronouns (8)   pro-drop rule (9)
         and context-sensitive   K   DP
         pro-drop rule (15)

                                                      D   NP

                                                            N   ...

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:

(17)   KP $\leftarrow$ target of radical pro-drop rule (9)

         target of spell-out $\rightarrow$ K   DP $\leftarrow$ possible target of spell-out
         rule for case   rules for pronouns
                                                      D   NP $\leftarrow$ possible target of
                                                                                              spell-out rules
                                                            N   ...   for pronouns

An example of a language with this set-up for overt pronouns is Japanese. Recall that this language has independent pronominal stems and case markers. These are inserted by the rules in (18). Application of these rules generates forms like (19).

(18) $[_{NP} +p, -a, 1\text{SG}] \Leftrightarrow$ /watasi/ $[_K \text{NOM}] \Leftrightarrow$ /ga/   Japanese
         $[_{NP} +p, -a, 2\text{SG}] \Leftrightarrow$ /anata/ $[_K \text{ACC}] \Leftrightarrow$ /o/   (simplified)
         $[_{NP} +p, -a, 3\text{SG, MASC}] \Leftrightarrow$ /kare/ $[_K \text{DAT}] \Leftrightarrow$ /ni/
         $[_{NP} +p, -a, 3\text{SG, FEM}] \Leftrightarrow$ /kanozyo/ $[_K \text{GEN}] \Leftrightarrow$ /no/
         $[\text{PL}] \Leftrightarrow$ /tati/; /ra/

(19)   kare-ra-ga
         he-PL-NOM
         'they'

Similarly, the nominative form of 'I' is *watasi-ga*, the accusative form is *watasi-o*, etc. Clearly, the general zero spell-out rule in (9) does not stand in an elsewhere relation with any of the rules in (18), which generate overt pronouns. The structural description of (9) is more specific in one sense, namely in that it spells out a larger chunk of structure than any of the rules in (18). On the other hand, the structural descriptions of the rules in (18) mention features that the zero spell-out rule is insensitive to, which makes *them* more specific. Hence, the structural description of the zero spell-out rule does not properly include those of the rules for overt pronouns; similarly, none of the structural descriptions of

the rules for overt pronouns properly includes that of the zero spell-out rule. As a consequence, there will be no blocking effects between (9) and (18), and omission should be possible for all pronominal arguments. This is indeed a fair characterisation of the situation in Japanese, as was shown in (1) above.

Another type of pronominal system that allows radical pro drop is found in Chinese. In this language, pronouns have invariant forms in subject and object positions. Possessors are derived by adding the particle *de*. A possible analysis of this situation would be to assume that case is not overtly realised, and that the spell-out rules for pronominal stems target a category lower than KP (for simplicity's sake, let us say NP). This is shown in (20). These rules generate pronouns like (21).

(20) $[_{NP}$ +p, –a, 1SG] ⇔ /wǒ/ $[_{K} ...]$ ⇔ ∅   Chinese
        $[_{NP}$ +p, –a, 2SG] ⇔ /nǐ/   [POSS] ⇔ /de/
        $[_{NP}$ +p, –a, 3SG] ⇔ /tā/   [PL] ⇔ /men/

(21)   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)).

4. More on pronouns without case

The main typological prediction we derived so far is that languages with radical pro drop must have a pronominal paradigm that is either invariant (as in Chinese) or agglutinative for case (as in Japanese). In other words, there should be no radical pro drop languages with a pronominal paradigm that is fusional for case.

For languages with an invariant pronominal paradigm, more precise predictions can be made. Recall that in our analysis of Chinese in (20) above, we have assumed that the spell-out rules that generate overt pronouns target a category lower than KP, and that there is a silent vocabulary item for K. However, one could in principle devise a set of spell-out rules for Chinese that target KP, as in (22). Such an analysis would of course imply that Chinese would not allow radical pro drop, because the rules in (22) block application of the radical pro drop rule.

(22) $[_{KP}$ +p, –a, 1SG] ⇔ /wǒ/   'Almost Chinese'
        $[_{KP}$ +p, –a, 2SG] ⇔ /nǐ/
        $[_{KP}$ +p, –a, 3SG] ⇔ /tā/

Hence, we seem to predict that languages with pronouns that do not vary for case may or may not be radical pro drop languages. As such, this is not problematic. Jamaican Creole, for example, has invariant pronouns and does not allow radical pro drop:

(23) $[_{KP}$ +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/

(24)   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 feisty in they ways
   'They were so feisty in their ways.'

There is a good reason why the Chinese pronominal paradigm should not be analyzed along the lines of Jamaican Creole, that is, as 'Almost Chinese'. The independent plural morpheme in examples like (21) shows that Chinese overt pronouns realize categories lower than KP. Greenberg's (1963) universal № 39 states that plural morphology is never realized externally to case morphology. This distribution can be derived if number is a feature belonging to a category lower in the extended nominal projection than case. Consequently, if a language realizes plural pronouns using a separate plural morpheme, the pronominal stem cannot correspond to KP. The analysis in (22) is therefore incompatible with the Chinese data, as it cannot accommodate the plural morpheme.

We can now be more explicit about which languages with pronouns that are invariant for case allow radical pro drop. If a language has pronouns accompanied by agglutinative markers expressing features located lower than KP in the extended nominal projection, radical pro drop will not be blocked. This is because the occurrence of such markers, which include plural morphemes, determiners and classifiers, signifies that categories lower than KP are spelled out.

We now turn to the question why Jamaican Creole cannot be analyzed along the lines of Chinese. Such an analysis cannot be excluded on purely logical grounds. We believe, however, that it is ruled out by an independent factor, namely a preference for spell-out rules that target the highest category compatible with their feature specification. This preference is a result of the lack of access to negative evidence in language acquisition. Suppose a child has acquired a pronominal form /xxx/ that realizes a set of features $\{F_1, F_2\}$, but he or she has not figured out yet what category the pronoun realizes:

(25) $[_? F_1, F_2] \Leftrightarrow$ /xxx/

Suppose, furthermore, that the lowest category that can host these features is N, and that /xxx/ could hence realize N, NP, DP or KP:

(26)

```
              KP
             /  \
            K    DP
                /  \
               D    NP
                   /  \
             N [F₁, F₂]  ...
```
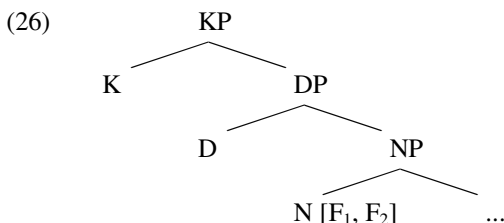
An insurmountable problem arises if the child hypothesizes that /xxx/ spells out N, while in the adult grammar it stands for a larger category, say KP. Under such circumstances, adult speakers will never produce data that can persuade the child to abandon his or her initial (incorrect) hypothesis. On the other hand, it is harmless for the child to hypothesize that /xxx/ realizes the highest category KP, even if in the adult grammar it stands for a lower category, say N. Adult speakers will produce data in which /xxx/ is combined with other KP-internal material, and this input will force the child to reassociate the rule in (25) with a lower-level category. Learnability thus dictates that spell-out rules are hypothesized to target the highest possible category compatible with their feature specification and distributional data (see Panneman and Weerman (2005) for a similar argumentation concerning the acquisition of determiners). The implication for Jamaican Creole is that its invariant pronouns must be associated with KP. Languages like Jamaican Creole will therefore not allow radical pro drop.

5. Concluding remarks

We summarize our predictions about the cross-linguistic distribution of radical pro drop as follows. Radical pro drop is possible in languages like Japanese, with agglutinating case morphology, or in languages like Chinese, with agglutinating number morphology. Languages may not have radical pro drop if their pronominal paradigms are fusional, like Dutch and English, or invariant, like Jamaican Creole, for all nominal features.

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