

Chapter 13

Pronoun incorporation

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In LFG, so-called ‘pro-drop’ is analyzed as pronoun incorporation, where the person and number marking on the head is the pronoun. The morphology on the head thus serves a dual function: it is an agreement marker when an independent noun or pronoun is present in the clause, and it is an incorporated pronoun when no independent nominal element is present. This chapter spells out the basic analysis of the interplay between pronoun incorporation and agreement marking in LFG. The analysis is illustrated with examples from subject, object, and possessive marking in multiple languages. The chapter also discusses cases where the agreement marker displays markedly different characteristics than the homophonous incorporated pronoun.

1 Introduction

In LFG, PRO-DROP is analyzed as pronoun incorporation. The term pro-drop (from the longer PRONOUN/PRONOMINAL DROPPING) refers to certain instances where a morphologically independent pronoun is not pronounced even though the sentence involves a pronominal interpretation. The pro-drop example in (1) is from Italian, a language that allows subject pro-drop (the example is from Burzio 1986: 92):

- (1) Italian
Ho mangiato bene.
have.1SG eaten well
‘I have eaten well.’



English is not a pro-drop language, and pronouns cannot be left unpronounced like subject pronouns can in Italian. However, possible pronoun omission is not an all-or-nothing phenomenon. Haegeman (1990) and Weir (2008) discuss the restricted omission of subjects which can occur in certain registers in English (especially so-called ‘diary drop’), and Cardinaletti (2014) shows that there is variation within Italian dialects regarding when pronouns can be dropped. The generalization remains that pronouns are omitted quite freely in most languages (e.g., Italian, Arabic, Chicheŵa), although some languages resist it (e.g., English, French).

The Italian example in (1) illustrates what is traditionally called pro-drop, where pronoun omission goes hand-in-hand with rich agreement marking on the verb (see, e.g., Chomsky 1981). The person, number and sometimes gender of the subject is indicated by the morphology on the verb, rendering the independent pronoun in a sense superfluous. This type of pro-drop is analyzed as pronoun incorporation in LFG: the agreement morpheme doubles as an incorporated pronoun.

Section 2 spells out the basics of this incorporation analysis of pro-drop, where the so-called agreement marker is in fact ambiguous between an agreement morpheme and a pronoun. When the independent pronoun is absent (‘dropped’), the morpheme is analyzed as a pronoun whose form is morphologically incorporated into the head. When the independent pronoun is present, the morpheme merely agrees with it.

Section 3 provides examples of pro-drop that illustrate the richness of the phenomenon. The term pro-drop is often used to refer exclusively to the omission of a subject pronoun, as in Italian, but the phenomenon is in fact not limited to subjects of finite verbs: any instance of INDEX agreement (Haug 2023 [this volume], Wechsler & Zlatić 2003) can involve pronoun incorporation.

Section 4 discusses the LFG analysis of pro-drop in light of the standard view of how agreement marking emerges through language change. The section reviews previous work which argues that the standard LFG analysis, positing ambiguity between agreement markers and pronouns, is natural given the grammaticalization path from independent pronoun to bound agreement morpheme.

Section 5 explores ambiguous forms that have grown apart beyond their mere status as pronoun or agreement marker. Many puzzling agreement phenomena from a variety of languages can be explained by the insight that the pronoun/agreement ambiguity assumed in LFG pro-drop analyses can lead to more radical differences between lexical entries that share a form.

Finally, Section 6 turns to a brief discussion of DISCOURSE PRO-DROP and TOPIC DROP. These two types of pro-drop have received less attention in the LFG literature, and, it seems, in the linguistics literature more generally. These types of

pro-drop are not tied to rich agreement and therefore tend to be analyzed with different syntactic mechanisms than the Italian-style pro-drop that is the main concern of this chapter.

Reflecting the majority of LFG research concerned with pro-drop, this chapter focuses on the morphosyntactic aspects of pronoun incorporation. However, discourse-pragmatic factors are also highly relevant for a full understanding of the phenomenon. In cases where pro-drop is syntactically optional, the distribution of pronouns is determined by discourse factors. This is illustrated by the Spanish examples in (2) provided by Pešková (2013). In (2a), the independent subject *yo* of the second verb is obligatorily expressed, but in (2b), the inclusion of a subject before the second verb would be infelicitous on the intended interpretation where *Pedro* is the subject of both verbs:

(2) Spanish

- a. Juan habla checo, pero yo hablo
 John speak.3SG.PRES.IND Czech but I.NOM speak.1SG.PRES.IND
 eslovaco.
 Slovak
 ‘John speaks Czech, but I speak Slovak.’
- b. Pedro canta y toca la guitarra.
 Peter sing.3SG.PRES.IND and play.3SG.PRES.IND the guitar
 ‘Peter sings and plays the guitar.’

Example (2a) differs from (2b) in that the subject of the second verb in (2a) is a contrastive topic, and contrastive topics are cross-linguistically often marked by emphatic forms or stress. In Spanish and many other languages, pro-drop only occurs when an appropriate antecedent is readily accessible in the discourse context. However, establishing what counts as an appropriate antecedent is non-trivial and seems to vary across languages and dialects (see Alonso-Ovalle et al. 2002; Holmberg 2010; and references provided in those works).

The pragmatic aspect of pro-drop has been addressed within the LFG literature. For example, Dahlstrom (1991: Chapters 4–5) shows that Plains Cree independent pronouns are only included when they are used contrastively. A few other LFG proposals that address pro-drop at the discourse-pragmatic level are referred to in Section 6. However, unlike the morphosyntax of incorporation-style pro-drop (the Italian, Spanish and Finnish type), there is no unique analysis of the discourse factors that is uniformly adopted across the LFG community, and the important question of exactly when “optional” pronouns are expressed will therefore not be discussed in detail.

2 Pronoun incorporation and agreement in LFG

The standard analysis¹ of pro-drop in LFG posits that the person and number morphology on the head (which is typically a verb) is the pronoun. The “agreement” morphology can thus be thought of as an incorporated pronoun when no corresponding independent pronoun or NP is present in the string. This has been the basic analysis of regular pro-drop in LFG since Fassi Fehri (1984, 1988, 1993) and Bresnan & Mchombo (1987). However, the insight predates Fassi Fehri, Bresnan and Mchombo and indeed the LFG framework. The same underlying idea has long been adopted by some traditional grammarians describing languages with prolific pro-drop. It is, for example, implicitly assumed by Ashton (1944), who notes in her Swahili grammar “...in a Bantu language function is more important than form, and one affix often has more than one function” (1944: 8).

The formal LFG analysis of pro-drop does not actually involve dropping or deleting a pronoun. There is no phonologically null pronoun present in the phrase structure. There is also no movement involved: the pronominal information is not assumed to have moved into the verbal position in order to be incorporated into the verb.

The separation of constituent structure (c-structure) and functional structure (f-structure) is key to understanding how LFG models pro-drop. C-structure and f-structure concern different aspects of syntactic structure. C-structure is typically modeled using phrase structure trees and displays information about syntactic category (e.g., noun, verb), word order and constituency. F-structure is modeled as feature structures (attribute-value matrices, AVMs) that contain information about formal features such as tense and case. Importantly, LFG also models syntactic functions (e.g., SUBJECT, ADJUNCT) using f-structures.

The basic LFG analysis of pro-drop is described in Haug 2023 [this volume] and will also be illustrated here with the help of example (3) from Finnish (Finno-Ugric):²

- (3) Finnish
 Join kahvia.
 drink.PAST.1SG coffee.PART
 ‘I drank coffee.’

¹Alternative analyses of pro-drop have been proposed within LFG; see Alsina (2020) for a recent example.

²The examples given here are from standard Finnish, which is the variety used in formal settings and in writing. Pro-drop is in fact less common in informal Finnish. Moreover, the discussion here only covers first and second person pronouns; third person pro-drop in Finnish is more constrained (Holmberg forthcoming).

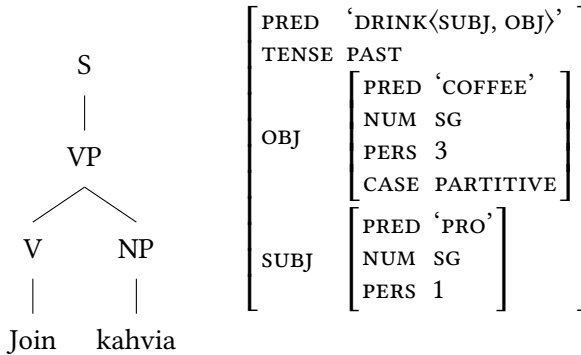
Finnish verbs inflect for three persons and two numbers. The full past tense paradigm for *juoda* ‘to drink’ is given in (4):

(4) *juoda* ‘to drink’ (Finnish)

SG	1	<i>join</i>
	2	<i>joit</i>
	3	<i>joi</i>
PL	1	<i>joimme</i>
	2	<i>joitte</i>
	3	<i>joivat</i>

The verb forms provide information about the subject’s person and number. In an example like (3), there is no syntactically independent subject. A standard LFG analysis would postulate that the morphological information concerning the subject on the verb is the subject. The c-structure and f-structure of (3) are given in (5):

(5) C-structure and f-structure for (3)

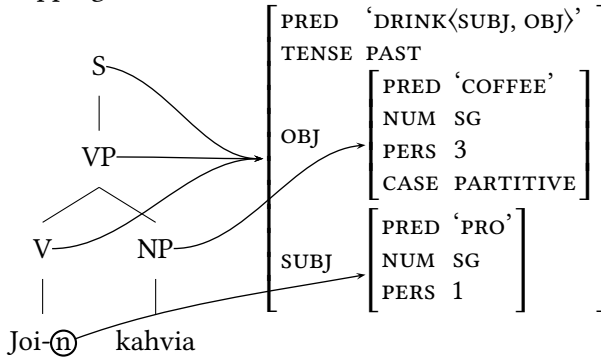


The verb *join* in (3) is not formed in c-structure or f-structure; it is fully formed in the lexicon.³ The c-structure does not have access to the internal structure of *join*: the terminal nodes in the phrase structure are morphologically complete words.

The mapping between c-structure and f-structure is not necessarily one-to-one; it allows for mismatches. Several f-structures can therefore receive featural information from the same word. In a sentence such as (3), the main f-structure of the sentence (the outer f-structure) and the subject f-structure both receive information from the verb *join*:

³The modular architecture of LFG is compatible with different theories of morphology (Dalrymple 2015, Dalrymple et al. 2019: Chapter 12; Bond 2016).

(6) Mapping between c-structure and f-structure, example (3)



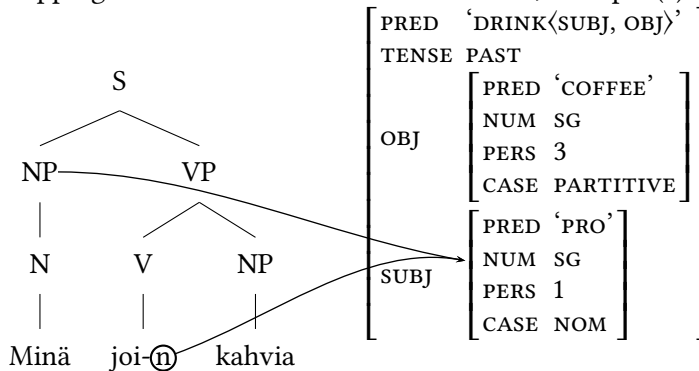
Information from several different words can also map onto the same f-structure. For example, in the Finnish sentence (7), information about the subject comes from both the pronoun *minä* and the agreement morphology on the verb.

(7) Finnish

Minä join kahvia.
 I.NOM drink.PAST.1SG coffee.PART
 'I drank coffee.'

The c-structure and f-structure for (7) are provided in (8):

(8) Mapping between c-structure and f-structure, example (7)



In sum, in Finnish and other subject pro-drop languages, the pronominal subject information can be provided by the morphology on the verb alone (as in (3)) or from the subject and the verb jointly (as in (7)).

According to the LFG analysis outlined above, the first person singular ending *-n* has a different function in (3) than in (7). In (3), the ending is the pronoun,

there is no feature conflict, but not with those of the pronoun *te* ‘you (plural)’, for example. The lexical entries for *minä* and *te* are given in (11a) and (11b), respectively:

- (11) a. *minä* (↑ PRED) = ‘PRO’
 (↑ NUM) = SG
 (↑ PERS) = 1
 (↑ CASE) = NOM
- b. *te* (↑ PRED) = ‘PRO’
 (↑ NUM) = PL
 (↑ PERS) = 2
 (↑ CASE) = NOM

The second person plural pronoun *te* will not co-occur with the first person singular *-n* because of the mismatch in features. The first person singular *minä* does co-occur with *-n* (see (7), for example). There is no mismatch in PERS or NUM, and *minä* can occur with the agreement marking ending in (10b). However, as mentioned above, each PRED value is assumed to be unique, and the pronoun *minä* can therefore not map onto the same f-structure as the pronominal *-n* ending in (10a), which itself contributes a PRED feature. The PRED feature of *minä* would also be ‘PRO’, but since every PRED feature value is unique, the two cannot combine. The single quotes around the semantic form indicate that it is unique. The uniqueness is sometimes also indicated with a subscript notation.

Again, the agreement marker *-n₂* in (10b) can co-occur with *minä*: *-n₂* has no PRED feature that could clash with the PRED feature of *minä*, the PERS and NUM features match and can unify, and the CASE feature is contributed by *minä* alone. In fact, *-n₂* would have to co-occur with some lexical entry in the string contributing a PRED feature, otherwise the f-structure of the sentence would end up containing a SUBJ feature without a PRED. This is only acceptable for syntactic arguments that are not semantic arguments (e.g., expletives). Each semantic argument needs a PRED feature, by the LFG principle of completeness. The following formulation of completeness is provided by Bresnan et al. (2016: 62):

- (12) COMPLETENESS:
- i. Every function designated by a PRED must be present in the f-structure by that PRED.
 - ii. If a designator (↑ GF) is associated with a semantic role by the PRED, the f-structure element satisfying the designator must itself contain a semantic feature [PRED *v*].

The features provided by *minä* will map onto the SUBJ function at f-structure by the regular mapping principles between c-structure and f-structure (Bresnan et al. 2016: Chapter 4), and so will the features provided by $-n_1$. In terms of feature content, the only difference between *minä* and $-n_1$ is that *minä* has a nominative CASE feature. The two entries are strikingly different in form: one is an independent word and the other a bound morpheme, and they also differ phonologically. However, the entries are nevertheless almost identical in terms of the feature content they contribute to f-structure. Since both *minä* and $-n_1$ have a PRED feature ‘pro’, they both function as pronouns, despite the differences in morphophonological realization. The LFG parallel architecture allows for the possibility that forms look different at c-structure but nevertheless have the same function at f-structure.

LFG also allows for mismatches in the other direction: same form, different function. This is illustrated by the ambiguity of the $-n$ form. The optionality of the PRED feature has an important effect on the function of the $-n$ morpheme: $-n_1$, with a PRED ‘pro’ feature, is a pronoun, and the ending $-n_2$, without a PRED feature, is an agreement marker.

The examples considered concern subjects. The pronominal possessors in standard Finnish also display pro-drop, as illustrated in (13). The possessive suffix ($-ni$ for first person singular) is obligatory but the independent pronoun is optional:⁶

(13) Finnish

- a. (Minun) auto-*ni* on vanha.
 my car-1SG.Px is old
 ‘My car is old.’
- b. *Minun auto on vanha.
 my car is old

Just like subject pro-drop, the analysis of possessor pro-drop relies on the PRED feature of the possessive suffix $-ni$. The suffix contributes a PRED ‘pro’ feature when it stands alone, and it lacks a PRED feature when it is doubled by the independent pronoun *minun*.

Examples of object pro-drop are also attested cross-linguistically. Object pro-drop is common across the Bantu languages, for example (Bresnan & Mchombo 1987, Hualde 1989, Barrett-Keach 1995, Riedel 2009, a.o.). The examples below,

⁶However, there are varieties of Finnish where the example in (13b), without the suffix, is grammatical.

adapted from Hualde (1989), are from the Bantu language KiRimi (also known as Nyaturu):⁷

(14) KiRimi

- a. N-a-kU-on-aa (veve).
1-TNS-OM-saw-FV you
'I saw you.'
- b. *N-a-on-aa veve.

Parallel to the Finnish subject and possessor examples above, the object markers that agree with independent pronouns in KiRimi are obligatory, while the independent pronouns themselves are optional. The analysis presented above can be applied in this case as well: the prefix *-kU-* has an optional PRED 'pro' feature and contributes its PRED feature only when *veve* is absent.

3 Pronominal marking across languages

This section explores some of the different ways languages make use of morphology on the head to provide information about dependents. The previous section presented the standard LFG analysis of pro-drop, which rests on the insight that the morpheme on the head has a dual function as an agreement marker and an incorporated pronoun. Of course, this does not mean that agreement morphemes *must* be able to double as pronouns. The English third person singular marker on present tense verbs (*-s* in *Mia walks*) functions solely as an agreement marker, for example. Like English, French does not allow pro-drop, even though French verbs display more detailed subject agreement marking than English, especially in the written forms. The paradigm for the verb *finir* 'to end, to finish' in (15) serves as an illustration:

- (15) *finir* 'to end, to finish' (French)
- | | | |
|----|---|------------------|
| SG | 1 | <i>finis</i> |
| | 2 | <i>finis</i> |
| | 3 | <i>finit</i> |
| PL | 1 | <i>finissons</i> |
| | 2 | <i>finissez</i> |
| | 3 | <i>finissent</i> |

⁷FV in the gloss stands for "final vowel". This "final vowel" in Bantu has received some attention in the literature for reasons not relevant here.

In LFG terms, the subject endings on French and English verbs are mere agreement markers that do not have PRED features, not even optional ones. Rich agreement without pro-drop is cross-linguistically very rare (Siewierska 1999).

Conversely, an incorporated pronoun does not necessarily double as an agreement marker. For example, Bresnan & Mchombo (1987) argue that object markers in the Bantu language Chicheŵa are unambiguously incorporated pronouns.⁸ Chicheŵa object markers are exemplified by the morpheme *chí* in (16) (Bresnan & Mchombo's example (12)):

- (16) Chicheŵa
 Fisi anadyá chímanga. Á-tá-chí-dya, anapítá ku San Francîsko.
 hyena ate corn(7) he-SERIAL-it(7)-eat he-went to San Francisco
 'The hyena ate the corn. Having eaten it, he went to San Francisco.'

The object marker *chí* is specified as noun class seven,⁹ and is naturally interpreted as referring back to 'corn' in (16). It is possible to also include a free-standing pronoun as in (17) (Bresnan & Mchombo's example (13)) below, but the pronoun is then not interpreted as referring back to the 'corn' object from the previous sentence:

- (17) Chicheŵa
 Fisi anadyá chímanga. Á-tá-chí-dya icho, anapítá ku San
 hyena ate corn(7) he-SERIAL-it(7)-eat it he-went to San
 Francîsko.
 Francisko
 'The hyena ate the corn. Having eaten it (something other than corn), he went to San Francisco.'

The grammatical object in the second sentence of (17) is the object marker, and the independent pronoun *icho* is a topic anaphorically linked to the object. In Chicheŵa, independent pronouns are used only for introducing new topics or for contrast (Bresnan & Mchombo 1987: 748).

Object markers can also co-occur with NPs headed by non-pronominal nouns:

⁸Bresnan & Mchombo (1987) use the term ANAPHORIC AGREEMENT for markers that have a pronominal function and GRAMMATICAL AGREEMENT for markers that have a mere agreement marking function and no referential properties.

⁹Bantu languages are well-known for their rich noun class (gender) system; see Katamba (2003) for an extensive overview. Chicheŵa has 18 noun classes that are listed in Bresnan & Mchombo (1987: Table 1). Agreement markers and pronouns reflect the class of the noun they agree with or refer to.

- (18) Chicheŵa
 Njâchi zi-ná-wá-lúm-a alenje.
 bees SM-PAST-OM-bite-INDIC hunters
 ‘The bees bit them, the hunters.’

In (18) (Bresnan & Mchombo’s example (2)), *alenje* is a floating topic linked to the object marker *wá*, which is an incorporated pronoun. However, if the full NP is a regular object with no special discourse status, the object marker does not appear:

- (19) Chicheŵa
 Njâchi zi-ná-lúm-a alenje.
 bees SM-PAST-bite-INDIC hunters
 ‘The bees bit the hunters.’

The object marker cannot co-occur with a regular object as that would result in a ‘PRED clash’: they would both contribute a PRED feature value and thus violate the uniqueness principle.

Bresnan & Mchombo (1987) provide ample evidence based on word order, intonation, tonal marking and other phenomena showing that the Chicheŵa pronominal object markers differ from subject markers. Chicheŵa subjects display regular pro-drop. The subject markers are obligatory, unlike object markers. A subject marker can be an agreement marker as in (19) above or an incorporated pronoun as in (20):

- (20) Chicheŵa
 Zi-ná-lúm-a alenje.
 SM(10)-PAST-bite-INDIC hunters
 ‘They bit the hunters.’

The Chicheŵa data show that different classes of morphemes (subject markers and object markers) can display different pro-drop characteristics within a single language. While the object marker functions as an incorporated pronoun only, the subject marker has a dual function as an agreement marker and a pronoun.

Agreement marking often shows sensitivity to animacy. Specifically, nouns that refer to entities higher on the animacy scale are more likely to trigger agreement. This effect is observed in many Bantu languages (Riedel 2009), for example Swahili (Barrett-Keach 1995) and KiRimi (Hualde 1989). KiRimi object markers agree with animate but not inanimate objects (Hualde 1989).

KiRimi object pro-drop was illustrated in (14) in Section 2, and is further illustrated in (21). The KiRimi examples in (21–22) and (24) are from Hualde (1989).

(21) KiRimi

- a. N-a-**mU**-on-aa Maria.
 1-TNS-OM-saw-FV Maria
 ‘I saw Maria.’
- b. N-a-**mU**-on-aa.
 1-TNS-OM-saw-FV
 ‘I saw her.’

Like Chicheŵa subjects, the KiRimi animate object marker has a dual function as an agreement marker (21a) and a pronoun (21b). This is captured here with an optional PRED ‘pro’ in the lexical entries for animate object markers. Inanimate object markers, on the other hand, cannot co-occur with independent objects:

(22) KiRimi

- a. N-a-**ki**-on-aa.
 1-TNS-OM-saw-FV
- b. *N-a-**ki**-on-aa kItabu.
 1-TNS-OM-saw-FV book
 ‘I saw it.’

Inanimate object markers can function as pronouns (22a), but they cannot agree with an object (22b). KiRimi inanimate object markers thus have an obligatory PRED feature, like the object markers in Chicheŵa. The lexical entry for the noun class 7 object marker *-ki-* is given in (23):

- (23) *-ki-* (↑ OBJ PRED) = ‘PRO’
 (↑ OBJ ANIMATE) = –
 (↑ OBJ PERS) = 3
 (↑ OBJ DEF) = +

The presence of an agreeing object marker further indicates a definite interpretation of the object. This is shown in (24a) and (24b), where the difference in interpretation is indicated by the translation:

(24) KiRimi

- a. N-a-**mU**-on-aa mwalimu.
 1-TNS-OM-saw-FV teacher
 ‘I saw the teacher.’

- b. N-a-on-aa mwalimu.
 1-TNS-saw-FV teacher
 ‘I saw a teacher.’

The object in example (24a) with the object marker receives a definite interpretation, whereas the object in (24b) without an object marker receives an indefinite interpretation. The lexical entry for the noun class 1 object marker *-mU-* is provided in (25):

- (25) *-mU-* ((↑ OBJ PRED) = ‘PRO’)
 (↑ OBJ DEF) = +
 (↑ OBJ ANIMATE) = +
 (↑ OBJ PERS) = 3

The PRED feature for animate *-mU-* is optional: the feature is present when the object marker is pronominal and absent when the object marker functions as an agreement marker. Both the pronoun and the agreement marker are definite: personal pronouns are in general definite, and the agreement marker ensures a definite interpretation of non-pronominal objects.

The generalizations that KiRimi object markers only double objects that are both definite and animate are captured here with simple lexical specifications and the LFG principle of uniqueness. The analysis is straightforward, but it does not explain the fact that the KiRimi facts follow certain cross-linguistic generalizations: dependents that are definite and high in animacy are cross-linguistically more likely to trigger agreement on the head. We will return to this point in Section 4.¹⁰

Like KiRimi, Irish shows that there can be differences with respect to pronouns and agreement marking within a single paradigm. However, in Irish, the

¹⁰ An anonymous reviewer points out that there might be noun classes with both animates and inanimates. Hualde (1989) does not address this possibility, but the description of KiRimi noun classes in Olson (1964) indicates that noun classes 9–10 and possibly 12–13 (diminutives) include both animates and inanimates. This is corroborated by Beletskiy & Diyammi’s (2010) notes on noun classes in the closely related dialect/language Isanzu. I have not found a discussion of what the agreement data are in these noun classes. Hualde makes the categorical claim that only definite animates trigger agreement. If this is correct, then each relevant prefix is best represented with two quite different lexical entries and are thus examples of LEXICAL SPLITS (discussed below in Section 5). However, Olson (1964: 171) provides a few examples where inanimate objects from class 9 (‘gardens’, ‘beehive’, ‘meat’) cooccur with an object marker. This would indicate that nouns referring to biological inanimates from class 9 carry a grammatical [+ANIMATE] feature. For other examples of misalignment between biological animacy and grammatical animacy, see Bayanati & Toivonen (2019) and references cited therein.

variation is not governed by definiteness or animacy, the pattern instead seems idiosyncratically determined by form. In Irish, some verb forms (synthetic forms) provide person-number information about the subject that other forms (analytic forms) do not. The following conditional paradigm from Ulster Irish is from McCloskey & Hale (1984):

- (26) *cuir* ‘to put’ (Irish)
- | | | |
|----|---|---|
| SG | 1 | <i>chuirfinn</i> |
| | 2 | <i>chuirfeá</i> |
| | 3 | <i>chuirfeadh sé</i> (MASC), <i>chuirfeadh sí</i> (FEM) |
| PL | 1 | <i>chuirfimis</i> |
| | 2 | <i>chuirfeadh sibh</i> |
| | 3 | <i>chuirfeadh siad</i> |

The synthetic forms *chuirfinn*, *chuirfeá* and *chuirfimis* contain information about the pronominal subjects, but *chuirfeadh* does not. The analytic *chuirfeadh* allows the subject to be expressed independently as a pronoun (*sé*, *sí*, *sibh*, or *siadh* in (26)) or a full NP. The synthetic forms cannot co-occur with independent pronouns, as evidenced by the ungrammaticality of (27) from McCloskey & Hale (1984):

- (27) Irish:
- **Chuirfinn mé isteach ar an phost sin.*
 put.COND.1SG I in on that job
 ‘I would apply for that job.’ (intended)

The fact that independent subject pronouns are ruled out indicates that the pronominal PRED features in the lexical entries of the synthetic forms *chuirfinn*, *chuirfeá* and *chuirfimis* are obligatory, unlike the optional subject PRED ‘pro’ features in Finnish and Chicheŵa. The PRED features contributed by the synthetic verb forms cannot unify with the PRED features of independent pronouns. In second person plural and third person singular and plural, however, the verb form does not contain any information about the subject. This information is instead contributed by independent pronouns. For more examples and discussion of variation within Modern Irish, see McCloskey & Hale (1984). For detailed LFG analyses, see Andrews (1990) and Sulger (2010).

This brief overview provides a sample of the variety of patterns that pro-drop languages put on display cross-linguistically. The cross-linguistic differences are captured lexically in LFG: an incorporated pronoun has a PRED ‘pro’ feature, an agreement marker has no PRED feature, and morphemes that lead a double life

as pronouns and agreement markers have an optional *PRED* feature. The data we have examined here illustrate that languages vary with respect to how they employ these possibilities. The data also illustrate that there can be differences within the same language between paradigms and, perhaps surprisingly, also within paradigms.

For more LFG analyses of pro-drop, drawn from a wide variety of languages and also a variety of types of pro-drop, see Dahlstrom (1991: Chapter 5) for Plains Cree subjects and objects, Sadler (1997) for Welsh subject and object clitics, Toivonen (2000, 2001) for Finnish infinitives, Strunk (2004, 2005) for nominal possessive constructions in Low Saxon, Rákosi & Laczkó (2011) for Hungarian spatial particles, Bayram (2013) for Turkish subjects and possessors, Laczkó (2017) for Hungarian possessors, and Dione (2019) for subjects in Wolof.

4 Grammaticalization

A stage where an affix is ambiguous between an agreement marker and a pronoun is unsurprising in light of the typical grammaticalization path of pronoun to agreement marker (Givón 1976, Mithun 1988, Hopper & Traugott 2003, van Gelderen 2011):

- (28) independent pronoun > weak pronoun > clitic pronoun > agreement affix > fused agreement marker

The naturalness of pronoun/agreement ambiguities given the grammaticalization cline in (28) has been noted in many previous analyses of pro-drop, including Fassi Fehri (1984), Bresnan & Mchombo (1987), Austin & Bresnan (1996), Toivonen (2001), Morimoto (2002), Butt (2007), Coppock & Wechsler (2010), Barbu & Toivonen (2018) and Haug 2023 [this volume]. These authors and others have pointed out that when pronouns transition into agreement affixes, there can be a stage where the forms are not immediately reanalyzed as wholesale agreement, but instead are agreement markers when they double an NP and pronouns when they do not.

The grammaticalization cline in (28) conflates multiple linguistic dimensions. One such dimension regards the function: Does the marker have pronominal referential capacity or is it a mere agreement marker? This is modeled at *f*-structure in LFG. Other dimensions concern the morphophonological realization as an independent word, a clitic, a bound agglutinative morpheme, or a fused morpheme. This is modeled at *c*-structure, *m*-structure and *p*(rosodic)-structure in LFG. A lexical entry can in principle be ambiguous between a pronoun and an agreement marker regardless of its morphophonological realization.

The grammaticalization path in (28) therefore conflates common sequences of changes that are often but not always parallel. One sequence concerns c-structural realization:

- (29) projecting word > non-projecting word > true clitic > affix > fused affix

A projecting word is a word that projects a phrase and a non-projecting word is a morphologically and phonologically independent word that does not project a phrase. A “true clitic” is here intended to refer to a form that does not project a phrase and is phonologically dependent on a host, but is not a bound morpheme. Projecting words can also be phonologically dependent on a host, which illustrates that prosody has in fact its own relevant dimension which could be separated from (29). Toivonen (2003: 45) provides examples of different types of projecting and non-projecting words and clitics. See also Lowe (2016) for a detailed treatment of clitics in LFG.

Another relevant scale concerns referential capacity:

- (30) noun > pronoun > ambiguous pronoun/agreement marker > agreement marker > transitivity marker

The prosodic or phrase-structural realization in (29) is orthogonal to the scale in (30), which is a nominal scale of referential strength. This is modeled here to a large extent with the *PRED* feature. As seen in the sections above, nouns, pronouns and agreement markers differ in their *PRED* feature: nouns have a contentful nominal *PRED* feature, pronouns have the *PRED* feature ‘pro’, and agreement markers have no *PRED* feature at all. A transitivity marker is referentially very weak, as it simply indicates that there *is* an object and does not say anything about what the object refers to.

Changes along the cline in (29) tend to be closely tied to changes along (30). In Siewierska’s (1999) survey of 272 languages, most pronouns (forms with obligatory *PRED* ‘pro’) are independent words; ambiguous forms (optional *PRED*) are small words, clitics or affixes; and pure agreement markers are affixes. However, the scales in (29) and (30) are not inherently connected. This disconnect is carefully argued for in van Rijn (2016), who draws on a sample of personal possessors from 39 different languages. She concludes that “loss of referentiality correlates with a loss in form, but in a relative rather than an absolute sense [...] function and form evolve in the same direction, but need not evolve at the same pace” (2016: 233).

The insight that function and form can change independently of each other is not difficult to capture within LFG, since the framework models different types

of linguistic information at distinct levels such as c-structure, p-structure and f-structure. The changes are also not difficult to formalize, and in fact the directionality of change seems natural within the framework. As explained in Bresnan & Mchombo (1987), the step from pronoun to optional agreement marker is modeled by the PRED feature changing from obligatory to optional. The step from ambiguous pronoun/agreement marker to pure agreement marker is modeled by the loss of the PRED feature. It is important to note, however, that even though this grammaticalization path is naturally modeled formally within LFG, the LFG framework does not dictate the directionality of the change. An explanation for this directionality needs to come from a substantive theory of language change. I will not provide such a theory here, but I will refer to a few insights from the previous literature.

As indicated by the hierarchies above, independent pronouns can be incorporated into the verb. Such a change does not necessarily occur, and it is not predictable exactly when it will occur. However, it is not surprising that such incorporation is common, given the fact that pronouns are typically unstressed and often positioned close to the verb. Pronouns are also often doubled by a full NP or a stressed pronoun, sometimes marked by some special morphology or intonation: (*As for*) *Carina, I really love her*. It is easy to see how such topic/focus NP + pronoun could come to be reanalyzed as argument NP + agreement marker. For example, recall that Chicheŵa object markers are incorporated pronouns that can double an object that is a discourse topic (Bresnan & Mchombo 1987). The string SUBJECT verb-*pronoun* TOPIC (where the TOPIC and the pronominal OBJECT are co-referential, e.g., (18)) could then in principle easily be reanalyzed as SUBJECT verb-*agreement* OBJECT. Bresnan & Mchombo (1987) indicate that this is precisely what has happened in some other Bantu languages, for example Makua. In light of this, it also makes sense that many agreement markers cross-linguistically agree exclusively with arguments that are high in topicality (Comrie 1981, Woolford 1999, Coppock & Wechsler 2010, Dalrymple & Nikolaeva 2011): it follows from the observation that the pronouns that were reanalyzed as agreement markers originally doubled topics. Since topics tend to be animate (Comrie 1981: 225; Arnold 2013, among others), it is also unsurprising that animates are more likely to agree than inanimates.

Other cross-linguistic observations follow from the very fact that agreement markers used to be pronouns. Agreement marking is often restricted to definite or specific arguments (see, e.g., the discussion of Romanian below). Personal pronouns are in general inherently definite and specific, so it is easy to see how such restrictions could remain when the markers lose their pronominal status.

Several cross-linguistic tendencies thus follow from an understanding of the history of agreement marking: agreement can be restricted to topics and to nominals with animate, definite or specific reference. It is important to note that although these generalizations can be readily captured with the LFG formalism, the formalism itself neither predicts nor dictates these tendencies. In LFG, it would be just as easy to formally specify that only indefinites agree in a given language, for example. However, given what research in historical linguistics and psycholinguistics has shown us, it would be unlikely for such a system to emerge.

One further important cross-linguistic generalization concerns the asymmetry between subjects and objects: object agreement marking is less common than subject agreement. In fact, Siewierska (1999) argues that there is no pure object agreement marking. According to Siewierska, apparent examples of object agreement are actually cases of ambiguous marking: the agreement morphemes double as pronouns. Siewierska (1999) offers some possible explanations for this asymmetry, but stresses that those explanations are tentative. In LFG, it is formally no harder to model object agreement than it is to model subject agreement. The forms would simply lack a *PRED* feature, like the English and French subject agreement markers mentioned in Section 3. The explanation for Siewierska's generalization thus does not come from the LFG formalism.

In general, I assume that insights about language use and change are largely independent of the formal tools that are used to model grammar. However, it is in principle possible to formulate a substantive theory of language change that is compatible with the LFG framework and that might shed light on attested cross-linguistic generalizations.

Up until now, we have mainly focused on the role of the *PRED* feature. However, other features are also involved and those features can change and erode as well. Coppock & Wechsler (2010) carefully detail the loss of *PRED* features alongside changes affecting other features such as *PERS*, *NUM*, *TOPICALITY* and *DEFINITENESS* in different ways in the Finno-Ugric languages Northern and Eastern Ostyak (Khanty) and Hungarian. Toivonen (2001) similarly traces the change of various features that lead to differences in the possessive systems of different dialects of Finnish and Saami. These works trace historical changes that target features other than *PRED* features, and such changes can lead to differences that reach beyond the *PRED* feature when a morpheme is at the ambiguous stage. The next section is devoted to examples where the pronominal morpheme is quite different from the agreement marker, even though they are identical in form.

5 Lexical splits

The LFG approach to pro-drop presented above relies on the insight that a form can have a dual function as an agreement marker and an incorporated pronoun. This duality opens the door to the possibility that the morphemes might grow further apart due to language change: since the morphological form corresponds to two similar but distinct lexical entries (one with and one without a PRED feature), the two entries might develop separately. This is in fact cross-linguistically common, and several examples will be given in this section.

One of the first languages for which the LFG theory of pro-drop was developed was Arabic. Abdelkader Fassi Fehri explored the subject agreement system in Modern Standard Arabic as well as local varieties of Arabic in several talks and papers. Fassi Fehri (1988) shows that some of the affixes are exclusively pronominal (this is the case for the first and second person affixes) and others are ambiguous between pronouns and agreement markers. He further argues that in some cases the pronominal affix is remarkably different from the agreement marking affix, which indicates that their lexical entries differ beyond the PRED feature.

Fassi Fehri's (1988) analysis of feminine subjects in MSA will be reviewed here. Fassi Fehri shows that the affix *-at* (also sometimes *-ati* in Fassi Fehri's examples) is ambiguous. In its pronominal use, it is a third person feminine singular. However, as an agreement marker, the same affix is less restricted. For example, *-at* (here *-ati*) agrees with a plural subject in (31):

- (31) Modern Standard Arabic
 ja:ʔ-ati l-bana:tu
 came-FEM.SG the-girls
 'The girls came.'

Fassi Fehri (1988) proposes the lexical entries in (32) for the *-at* affix, indicating that the agreeing affix is only constrained by gender.

- | | | | |
|------|---------------|---------|---------------------|
| (32) | Pronoun: | | Agreement: |
| | (↑ SUBJ PRED) | = 'pro' | |
| | (↑ SUBJ GEND) | = FEM | (↑ SUBJ GEND) = FEM |
| | (↑ SUBJ NUM) | = SG | |
| | (↑ SUBJ PERS) | = 3 | |

Fassi Fehri (1988) further proposes that strong forms of pronouns are never directly assigned subcategorized functions in Arabic. Instead, they are always assigned the FOCUS function, which is a grammaticalized discourse function. As

such, emphatic pronouns in MSA do not co-occur with the agreement marking version of *-at* even when they are feminine. It would result in a coherence violation: neither the emphatic pronoun nor the agreement marker contributes a PRED feature to the SUBJ.

The *-at* ending can be contrasted with the third person feminine plural affix *-na*, which, unlike *-at*, is a pronoun only and cannot agree:

(33) Modern Standard Arabic

- a. *ji:ʔ-na*
 came-FEM.PL.HUM
 ‘They came.’
- b. **ji:ʔ-na* *l-bana:tu*
 came-FEM.PL.HUM the-girls

The feminine plural pronoun *-na* can only co-occur with independently expressed nouns when they are topics:

(34) Modern Standard Arabic

- al-bana:tu ji:ʔ-na*
 the-girls came-FEM.PL.HUM
 ‘As for the girls, they came.’

In (34), the pronominal affix *-na* is the true subject. The noun *al-bana:tu* is a topic, as evidenced in part by the word order: the unmarked word order in Standard Arabic is VSO. When *al-bana:tu* precedes the verb, *-at* is not felicitous:

(35) Modern Standard Arabic

- *al-bana:tu ja:ʔ-at*
 the-girls came-FEM.SG
 (intended) ‘As for the girls, they came.’

The pronominal *-at* is singular and cannot refer to the plural *al-bana:tu*. The agreement marking *-at* does not contribute a PRED feature. As the TOPIC, the NP *al-bana:tu* also does not contribute a PRED feature to the SUBJ. The agreement marker cannot alone correspond to the SUBJ function, since the subject needs a PRED feature due to the LFG completeness condition, provided in (12) above. In these specific examples, the verb ‘to come’ requires a subject with a semantic role, and that subject needs a PRED. In (31), *l-bana:tu* is the subject, and provides the PRED feature. In (33) and (34), the pronominal affix *-na* contributes a pronominal

PRED feature to the SUBJ f-structure. In (35), *al-bana:tu* provides a PRED feature to the TOPIC function, not the SUBJ function. The agreement marking affix on the verb does not provide a PRED feature at all.

Fassi Fehri (1988) introduces further lexical entries and also specific rules to cover the complex pronominal and agreement system in Standard Arabic. Additional examples accompanied by discussions of computational implementations of Arabic agreement are provided by Hoyt (2004) and Attia (2008). Crucial to the point here is that already one of the first treatments of pro-drop in LFG pointed out that an agreement affix can diverge from a homophonous pronominal affix in features other than just the PRED feature. The agreement marking *-at* differs from the pronominal version of the same form, and Fassi Fehri captures the differences straightforwardly with the lexical entries.

Next we consider so-called ‘clitic doubling’ in Romanian. In Romanian, objects can be ‘doubled’ by a morpheme that agrees in person, number and gender. This morpheme is typically referred to as a clitic, but its morphophonological status is controversial (Dobrovie-Sorin 1994, Monachesi 1998, Popescu 2000, Luís 2004). Romanian clitic doubling is exemplified in (36), where the object *pe băiat* is doubled by the clitic *l-*:

- (36) Romanian:
 L-am văzut pe băiat.
 3SG.M.ACC-have.1SG seen ACC boy
 ‘I saw the boy.’

In some dialects of Romanian, all definite objects are doubled (Tomić 2006: Chapter 4; Tomić 2008: 84; Hill 2013, Barbu & Toivonen 2018). This is the case in the Aromanian dialect (spoken in Albania, Macedonia, Romania, Bulgaria, Serbia and Croatia) and the Megleno-Romanian dialect (spoken in Greece and Macedonia). Since the relevant pronouns are inherently definite, these dialects can be analyzed in LFG with an optional PRED feature in the lexical entry for the clitic, just like most of the pro-drop examples discussed above.

However, in other dialects of Romanian, including the standard variety, doubling is restricted to *pe*-marked, human, definite objects. For example, the non-human direct object ‘snail’ in (37) cannot be doubled by a clitic:

- (37) Romanian:
 a. Am văzut melcul.
 have.1SG seen snail.DEF
 ‘I saw the snail.’

- b. *L-am văzut (pe) melc.
 3SG.M-have.1SG seen ACC snail

The clitic can refer to non-humans when it stands alone. For example, the *l-* in (38) can refer back to *melcul*, the snail:

- (38) Romanian:
 L-am văzut.
 3SG.M.ACC-have.1SG seen
 ‘I saw it/him.’

The clitic in (38) could also refer to a human participant.

The restrictions on doubling in this variety of Romanian indicate that the agreement marking clitic and the pronominal clitic differ beyond the presence or absence of the PRED feature. Barbu & Toivonen (2018) spell out the details of such an analysis, and their account is summarized here. They follow the Romanian tradition of treating *pe* as an accusative case marker (e.g., Cornilescu 2000) that is specified for human animacy, and they posit the lexical entries in (39) for the pronominal and agreement-marking clitics.

- | | | | |
|------|------------|----------|-----------------------------|
| (39) | Pronoun: | | Agreement: |
| | (↑ PRED) = | ‘pro’ | |
| | (↑ PERS) = | α | (↑ PERS) = α |
| | (↑ NUM) = | β | (↑ NUM) = β |
| | (↑ GEND) = | γ | (↑ GEND) = γ |
| | (↑ CASE) = | ACC | (↑ CASE) = _c ACC |
| | (↑ DEF) = | + | (↑ DEF) = + |

The variables α , β and γ simply stand for different PERS, NUM and GEND features that vary according to which form is used: *mă/m-* for first person singular, *te* for second person singular, *îl/l-* for third person singular masculine, etc.

The two entries in (39) only differ very slightly. The pronouns have a PRED ‘pro’ feature and the agreement markers do not, just like we have seen in several examples above. However, there is one small but important further difference: the *case* is specified as a defining equation for the pronoun and a constraining equation for the agreement marker. The regular defining equation of the pronoun directly contributes a [CASE ACC] feature to the object f-structure. The constraining equation requires a [CASE ACC] feature, but does not itself provide it. If the feature is not provided in some other way, the agreement marker is illicit. The marker *pe* provides the ACC feature that is needed. This explains why the clitic cannot occur

without *pe*. When *pe* functions as a case marker (*pe* has an additional function as the preposition ‘on’), it is also specified for human animacy, and this indirectly explains why only objects with human reference can be doubled.

Tigău (2010, 2014) reports that some speakers of Romanian allow clitic doubling with indefinites:

- (40) Romanian:
 Petru (I)-a vizitat *pe* un prieten.
 Peter 3SG.M-have.3SG visited ACC a friend
 ‘Peter visited a friend.’

Even the speakers who allow doubling with indefinite objects allow it only sometimes. Tigău (2010, 2014) argues that doubled indefinite objects get a *specific* interpretation (see also Aoun 1981: Chapter 3).

The difference between the standard variety of Romanian (captured by (39)) and the indefinite-doubling dialect described by Tigău is captured by the lexical entries in (41):

- | | | | | |
|------|----------|---|------------|-----------------------------|
| (41) | Pronoun: | | Agreement: | |
| | (↑ PRED) | = | ‘pro’ | |
| | (↑ PERS) | = | α | (↑ PERS) = α |
| | (↑ NUM) | = | β | (↑ NUM) = β |
| | (↑ GEND) | = | γ | (↑ GEND) = γ |
| | (↑ CASE) | = | ACC | (↑ CASE) = _c ACC |
| | (↑ DEF) | = | + | (↑ SPECIFIC) = + |

In this dialect, the pronoun is the same as in the standard dialect, but the agreement marker is marked for specificity instead of definiteness.

In two of the dialects of Romanian that have been considered here, the difference between the agreement marking clitic and the pronominal clitic goes beyond the PRED feature. Again, this kind of ‘split’ is not unexpected under the LFG account of pro-drop, since the optional PRED feature in effect means there are two lexical entries: one agreement marker and one pronoun.

Romanian is not the only Romance language in which the agreement marking clitic and pronominal clitic are markedly distinct. Varieties of Spanish display clitic systems very similar to that of Romanian (see, e.g., Mayer 2017). Andrews (1990) and Estigarribia (2013) analyze Rioplatense Spanish within an LFG framework, and they both propose entries for pronominal clitics that differ from the agreement clitics beyond the PRED feature. Estigarribia specifically proposes that the agreement marker has a specificity feature that the pronominal clitic lacks,

which would indicate that Rioplatense Spanish clitics are very similar to the Romanian clitics represented in (41).

Finnish possessive suffixes provide yet another example of ‘lexical splits’. Pronominal possessors in standard Finnish are marked by an independent pronoun and a suffix on the possessed noun or by a suffix alone (42):

- (42) Finnish
 Jukka näkee (minun) ystävä-ni.
 Jukka sees my friend-1SG
 ‘Jukka sees my friend.’

In first and second person, the independent pronoun is optional, and our basic LFG pro-drop analysis can be employed: first and second person possessive suffixes have an optional PRED ‘PRO’.

The optionality of the PRED ‘PRO’ in Finnish possessive suffixes was already mentioned in Section 2. However, the third person suffix displays a more significant split. When a third person independent pronoun is omitted and possession is marked by just a third person suffix, the possessor is necessarily bound by a subject within the minimal finite clause:

- (43) Finnish
 Jukka_i näkee ystävä-nsä_{i/*j}.
 Jukka sees friend-3
 ‘Jukka sees his (own) friend.’

Conversely, when an independent pronoun is present, the possessor *cannot* be bound by a subject:

- (44) Finnish
 Jukka_i näkee hänen_{*i/j} ystävä-nsä.
 Jukka sees his/her friend-3
 ‘Jukka sees his/her friend.’

In Toivonen’s (2000) analysis, the suffix in (43) is an anaphoric pronoun with a PRED feature, and the suffix in (44) is an agreement marker without a PRED feature. The entries further differ in that the agreement suffix is restricted to agreement with human personal pronouns (45a–45d), even though the pronominal suffix can be bound by both nouns and pronouns with human or non-human referents (45e):

(45) Finnish

- a. Jukka näkee Pekan ystävän.
Jukka sees Pekka's friend.ACC
'Jukka sees Pekka's friend.'
- b. *Jukka näkee Pekan ystävä-nsä.
J. sees Pekka's friend-3Px
- c. Jukka näkee sen hännän.
Jukka sees its tail.ACC
'Jukka sees its tail.'
- d. *Jukka näkee sen häntää-nsä.
Jukka sees its tail-3Px
- e. Se/koira_i heiluttaa häntää-nsä_i.
It/dog wags tail.PART-3Px
'It/the dog is wagging its tail.'

The Finnish pronominal possession system thus provides a further example where pro-drop involves two homophonous but syntactically quite distinct lexical entries: one agreement marker and one pronoun. In the case of Finnish third person possessive suffixes, the pronoun is anaphorically bound and has no animacy restrictions. The agreement marker agrees only with personal, human pronouns that are not anaphorically bound. For a lexical formalization similar to the analyses of Arabic subject markers and Romanian object clitics outlined above, see Toivonen (1996, 2000). For a different analysis, and also more data and references as well as a critique of the LFG analysis, see Humarniemi & Brattico (2015).

The final language we will consider in this section is Pakin Lukunosh Mortlockese. The Mortlockese data and generalizations come from Odango (2014). Odango argues that the third person singular object marker in this Micronesian language shows a split between incorporated pronoun and transitivity marker. He further shows that other object suffixes (the first and second person suffixes and the third person plural suffix) do not involve a split; they function exclusively as incorporated object pronouns (Odango uses the term 'anaphoric agreement', following Bresnan & Mchombo 1987). Example (46) illustrates the second person singular object suffix, which cannot co-occur with an independent pronoun:

- (46) Mortlockese
 I=aa wor-o-k (*een).
 1SG.SBJ-REALIS see-TH-2SG.OBJ 2SG
 ‘I see you.’

The third person singular marker is also an incorporated pronoun when there is no independent object:

- (47) Mortlockese
 anga-i-tou mwo
 take-3SG.OBJ-downward please
 ‘Please take it down.’

The object marker is translated here as *it*, but it can also be translated as *him* or *her*. The pronominal third person singular marker has a PRED feature ‘pro’.

Unlike the other object suffixes, the third person singular suffix can co-occur with an object. When it does, there are no number restrictions on the object. Odango argues that the suffix is a *general transitivity marker* when it co-occurs with an object. In (48), the suffix agrees with a third person plural object:

- (48) Mortlockese
 Ngaan i=sán mwo shuu-{nge-i/*nge-er}
 1SG.EMPH 1SG.SBJ=NEG.POT yet meet-TH-3SG.OBJ/TH-3PL.OBJ
 mwáán=kewe.
 man=DIST.PL
 ‘As for me, I have not yet met those men.’

Note that the third person plural marker is not admissible in (48), because it functions solely as a pronoun with a PRED ‘pro’ and can therefore not co-occur with the object *mwáán=kewe*.

According to Odango, the transitivity marking suffix is generally limited to third person for many speakers, but some speakers also accept examples where the transitivity marker co-occurs with a first or second person independent pronoun.¹¹ He provides the following example, which is accepted by some younger speakers:

¹¹The independent pronouns only appear with borrowed verbs and a few verbs that cannot be inflected (Odango 2014).

- (49) Mortlockese
 R-aa wér-e-i kiish.
 3PL.SUBJ-REALIS see-TH-3SG.OBJ 1PL.INCL
 ‘They see us (incl.).’

For most speakers, however, it seems that the transitivity marker is restricted to third person. Odango (2014) reports on one further restriction on the use of the transitivity marker: it seems to be restricted either for definiteness or specificity. Odango also points to interesting age and geographical variation regarding the exact use of the marker. The variation details are interesting, but they will nevertheless be set aside here.

The basic generalization that the third person singular object marker has split into a pronominal suffix and a transitivity marker is clear. Odango (2014) ties his discussion to Bresnan & Mchombo (1987), but he does not provide a formal analysis of Mortlockese. However, the generalizations he provides evidence for can be captured by the following lexical entries for the marker *-i*:

- | | | | | |
|------|--------------|---------|----------------------|-----|
| (50) | Pronoun: | | Transitivity marker: | |
| | (↑ OBJ PRED) | = ‘pro’ | (↑ OBJ DEFINITE) | = + |
| | (↑ OBJ PERS) | = 3 | (↑ OBJ PERS) | = 3 |
| | (↑ OBJ NUM) | = SG | | |

The lexical entries in (50) are tentative but serve to illustrate the relevant lexical split. The pronominal version of the third person singular suffix is straightforward. Since it provides a *PRED* feature, it cannot co-occur with an independent object. However, the transitivity marker version of the suffix *requires* an independent object. The presence of (↑ OBJ) features ensures the presence of an OBJ function in the f-structure corresponding to the verb that the ending is attached to. This object function needs a *PRED* feature because of the completeness condition, and this feature is provided by an appropriate object in the c-structure. The lexical entry for the transitivity marker includes a third person object feature. However, for speakers that allow it to co-occur with first and second person pronouns (see (49)), the lexical entry will not include a *PERS* feature. I assume here that the transitivity marker is specified for definiteness, but Odango hints that it is unclear whether the relevant feature is definiteness or specificity. It is possible that this point is also a matter of speaker variation. In any event, the transitivity marking entry can be modified to include a specificity feature instead of a definiteness feature.

Although the Pakin Lukunosh Mortlockese data involve variations and points to be further investigated, it is clear that the third person singular object marker

involves a split. Odango argues that the split is between a pronoun and a transitivity marker. From a historical perspective, the emergence of this split is unsurprising: object markers often grammaticalize into transitivity markers, sometimes via object agreement marking (Lehmann 2002, Mayer 2017, Widmer 2018).

In sum, a pro-drop analysis where an incorporated morpheme is assumed to have a dual function and correspond to both an agreement marker and a pronoun leads to the prediction that the two versions of the morpheme can change independently and grow further apart. This section has considered multiple examples that indicate that such cases do, in fact, occur. The examples we have considered come from Standard Arabic subject marking, Romanian object clitic doubling, Finnish possessive marking, and Mortlockese object marking. In the first three cases, the pronominal version of a morpheme displays different characteristics than the corresponding agreement-marking morpheme. In the Mortlockese case, we adopted Odango's proposal that the non-pronominal version of the third person singular incorporated pronoun is a transitivity marker.

6 Pro-drop without agreement marking

The focus of this chapter has been on cases where information about the dropped arguments is encoded on the head as an incorporated pronoun. However, sometimes pronouns are omitted even though there is no corresponding morphology on the head. This is the case in DISCOURSE PRO-DROP. Some LFG work on this type of pro-drop will be briefly reviewed in this section, even though it does not involve morphological pronoun incorporation.

Chinese and Japanese lack morphological agreement marking but nevertheless allow argument omission. A Cantonese example, originally from Luke et al. (2001), is given in (51):

- (51) Cantonese (Talking about dogs)
 wui5-m4-wui5 beng6 gaa3
 will-not-will ill PART
 'Would (they = the dogs) get ill?'

This kind of pronoun omission is referred to as DISCOURSE PRO-DROP or RADICAL PRO-DROP. Discourse pro-drop is substantially different from pro-drop linked to agreement (Neeleman & Szendrői 2007, Sigurðsson 2011, Irgens 2017),¹² although

¹²Discourse pro-drop has been argued to in fact resemble general nominal ellipsis more than pro-drop (Irgens 2017).

they occur under similar pragmatic conditions, which are also conditions under which omission of weak pronouns occur in the Germanic languages (Sigurðsson 2011, Rosén 1998: and references therein). Focussing on omitted subjects, Luke et al. (2001) analyze Cantonese discourse pro-drop in LFG. They propose specific discourse-pragmatic criteria to explain how empty subjects receive an interpretation. They also posit an empty subject node in the c-structure, which renders their analysis unusual from a mainstream LFG perspective, where empty c-structure material is avoided since it is deemed unnecessary and computationally costly.

Rosén (1998) develops a different LFG analysis for Vietnamese. Vietnamese allows the subject, object and second object (OBJ_θ) to be dropped, even though there is no morphology on the head to indicate the characteristics of the omitted element. Two examples from Rosén (1998: 146) are given in (52):

(52) Vietnamese

- a. Ăn ít cỏ lắm.
eat few grass very
'(It) eats very little grass.'
- b. Ông Ba tặng một bó hoa hồng hôm nọ.
Mr. Ba give one bunch flower pink day other
'Mr. Ba gave (her) a bunch of roses the other day.'

In Rosén's analysis, the dropped pronouns (*it* and *her* in the examples above) are not represented in the c-structure. In the f-structure, they are represented as the relevant grammatical functions. The PRED 'pro' features are contributed by optional equations in the phrase structure rule for S for the SUBJ and the VP rule for OBJ and OBJ_θ . The f-structures of Vietnamese examples with pro-drop will thus look quite similar to examples where the c-structure does contain expressed pronouns, and also similar to the f-structures of Italian-style pro-drop languages, where other morphology provides the pronominal information. A difference is that the f-structures for the pro-dropped grammatical functions in Vietnamese do not contain person and number information. The key to understanding how empty pronouns assign reference in Vietnamese lies in semantic structure (s-structure) and discourse structure (d-structure), according to Rosén. Like the f-structure information, the semantic schemata needed for the s-structure of the unpronounced pronoun are contributed by the c-structure rules. These schemata include basic semantic information, such as specifications regarding the argument-function mapping.

Rosén (1998) stresses that the interpretation of the dropped pronouns does not depend on guessing. According to Rosén (1998: Chapter 7), one condition for pronoun omission is REFERENTIAL GIVENNESS, meaning the existence of a presupposition of unique reference. Another important condition is RELATIONAL GIVENNESS: the intended referent is clear with relation to the verb in context.¹³ This is, for example, the case when the verb is the same as in an immediately preceding context. In this case, the participants of the event referred to by the verb remain the same and can be omitted. For example, if someone asks *Did Sarah cook the meat?* and the response repeats the verb *cooked*, no pronouns are included in Vietnamese as it is clear that the participants remain the same. Another example of relational givenness would be *Sarah bought some meat and (she) cooked (it)*, where in the Vietnamese equivalent both the subject and the object pronoun can be omitted. The use of empty pronouns signals that the speaker is sure that the propositional content makes clear which referents to supply for the arguments (Rosén 1998: 137).

Butt & King (1997) show that pro-drop in Hindi/Urdu is not necessarily tied to agreement, and like Rosén, they argue for a discourse-based account. They argue that pronouns can only be omitted if they are continuing topics or backgrounded information, and they model their analysis on the independent linguistic level of i(nformation)-structure.¹⁴ Butt (2007) extends Butt & King's analysis to Punjabi. The analyses developed by Butt & King (2000), Luke et al. (2001) and Rosén (1998) differ significantly from each other, and this indicates that there is room for more (perhaps cross-linguistic) research on discourse pro-drop within LFG. In general, discourse structure has received less attention in LFG than other levels of linguistic representation, but see King & Zaenen (2004), Dalrymple et al. (2018), and references cited in those works for important proposals.

Yet another type of pronoun omission is TOPIC DROP, which is found in several Germanic languages and illustrated in the Swedish example in (53):

- (53) Swedish
 Kommer kanske att sakna det.
 come perhaps to miss it
 '[I/We/They...] will perhaps miss it.'

¹³According to Rosén's formal analysis of the discourse conditions, empty pronouns must always be part of the TAIL value at d-structure, where the TAIL is understood as the s-structure of the sentence minus the value of the LINK and the FOCUS.

¹⁴Rosén (1998) uses the label d(iscourse)-structure and Butt & King (1997) use i(nformation)-structure to formalize the same type of phenomena. Zaenen 2023 [this volume] provides a comprehensive overview of LFG research on i-s and d-s in LFG. She reserves the term i-s for sentence-internal information, and d-s for larger units of discourse.

Swedish verbs bear no agreement and the interpretation of the dropped elements is provided by the context. In these two respects, topic drop is similar to discourse pro drop. However, topic drop is more restricted and only elements in the left periphery of the sentence can be dropped (Neeleman & Szendrői 2007, Sigurðsson & Maling 2008, Sigurðsson 2011). Topic drop has not been treated extensively in LFG, but Berman (1996) provides an analysis of the phenomenon in German.

7 Summary

The focus of this chapter has been the LFG theory of pronominal incorporation and the interactions between nouns, independent pronouns, incorporated pronouns, and agreement markers. The analysis of regular pro-drop centers on the person, number and gender marking on the head, which is often ambiguous between an agreement marker and a pronoun. In other words, the marker is an incorporated pronoun, or else it simply agrees with an independent pronoun or noun.

Languages vary with respect to exactly how pronominal information is expressed morphosyntactically, and many different systems have been captured with LFG analyses that take the basic agreement marker-pronoun ambiguity as its starting point. The overview of the literature provided in this chapter illustrates how the typological diversity can be formally understood by appealing to features, feature unification and the mappings between independent linguistic levels.

The LFG theory of pronoun incorporation and pro-drop aligns well with the research on the grammaticalization of pronominal forms and agreement marking. In Section 4 it was argued that although LFG does not technically offer substantive historical explanations, the framework provides formal tools which are suitable for modelling the attested diachronic changes and trends.

Ambiguity between agreement marker and pronoun can give rise to changes that further differentiate between pronominal and agreement morphemes. Such drifts are not uncommon, as illustrated by the examples in Section 5. Many languages have agreement morphemes that differ in clear and significant ways from incorporated pronouns. For example, the Finnish third person possessive suffix is restricted to non-anaphoric human personal pronouns in its agreement use, but it has no animacy restrictions and must be anaphorically bound in its pronominal use.

Finally, Section 6 of this chapter briefly reviewed some LFG accounts of pro-drop that do not involve pronominal incorporation or any morphology indicating the person and number of the omitted discourse participant. These cases are

interesting for many reasons. First, they illustrate the importance of discourse-pragmatic principles for pronominal interpretation. Second, these cases pose an interesting challenge for the theory of LFG f-structure. The principle of completeness dictates that a semantic argument needs a PRED feature, and it is not obvious where that feature comes from in cases of discourse pro-drop, where the participant does not have a phonological realization in the linguistic string.

In conclusion, the basic LFG theory of pronominal incorporation and agreement that was first formulated by Fassi Fehri (1984, 1988) and Bresnan & Mchombo (1987) is still adopted today. Over the past four decades, that theory has been used as a tool to gain insight about the details of pro-drop in a large number of languages.

Acknowledgements

I would like to thank three anonymous reviewers for very thorough and insightful comments. I also want to thank Raj Singh, Victoria Rosén, Mary Dalrymple, Roxana-Maria Barbu and Katie Van Luven for their helpful comments on earlier versions of this chapter. The paper has been much improved thanks to the feedback that I have received, but I want to stress that all remaining mistakes and misunderstandings are my own.

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