

# Postnominal modification in Kurdish

Jan Strunk

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## 1 Introduction

In Kurdish and related languages such as Persian (cf. Kahnemuyipour 2000) most modifiers in a noun phrase such as adjective phrases, prepositional phrases, and possessor phrases, are realized postnominally. However, they are not simply juxtaposed to the noun (phrase) they modify. Instead a linking article or linker traditionally called *ezafe* is obligatorily used in between the modified noun (phrase) and the following modifier. If a noun phrase contains multiple postnominal modifiers, every one of them has to be preceded by the *ezafe* linker. In this paper give an overview of the phenomenon *ezafe* in Kurdish and sketch a first HPSG construction grammar account of this phenomenon which assumes that the *ezafe* morpheme is used as a syntactic marker of modification. I will incorporate the results of recent studies on nominal syntax in HPSG such as van Eynde (2002), van Eynde (2004) and Sag et al. (2004).

The data I use in this paper stem from fieldwork on the northern dialect of Kurdish called Kurmancî<sup>1</sup> which was carried out at the University of Bochum, Germany, with a native speaker of the dialect of Muş, Turkey. As a second source, I cite sentences from Wurzel (1997), which is a Kurmancî introductory text book for German speakers.

## 2 Postnominal modification in the Kurdish noun phrase

### 2.1 The function of *ezafe* marking

In Kurmancî, a non-pronominal noun phrase minimally consists of the head noun, cf. example (1).<sup>2</sup>

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<sup>1</sup>Kurmancî is a northern dialect of Kurdish spoken in Armenia, Azerbaijan, Iran, Iraq, Syria, and Turkey. Cf. the Ethnologue: [www.ethnologue.com](http://www.ethnologue.com).

<sup>2</sup>I use the following abbreviations in my glosses: 1 = first person, 2 = second person, 3 = third person, DEM = demonstrative, EZ = *ezafe*, F = feminine, M = masculine, NOM = nominative, OBL = oblique, PL = plural, PRES = present, SG = singular. I use the dash – with affixes, the equal sign = with clitics, and the period . when multiple categories are encoded in one morpheme.



- (10) \**mal* [<sub>PP</sub> *sere çiya*]  
house on mountain  
‘the house on the mountain’
- (11) \**mal* [<sub>RelCl</sub> *ku ez di-bin-im*]  
house that I DUR-see-1.SG  
‘the house that I see’

That the ezafe marking is directly dependent on the presence of a post-nominal modifier is shown by the ungrammatical example (12) in which a non-modified noun is used with an ezafe suffix.

- (12) \**mal-a sor=e*.  
house-EZ.F.SG red=be.2/3.SG.PRES  
‘The house is red.’

In contrast to Persian where the form of the ezafe morpheme is invariantly *-e* (cf. Kahnemuyipour 2000), the ezafe morpheme in Kurmancî agrees with the head noun in number and gender and also encodes information about the definiteness of the noun phrase in at least some dialects (Wurzel 1997; Schroeder 1999). The gender and number agreement is exemplified in (13)–(15).

- (13) *heval-ê min* (14) *heval-a min*  
house-EZ.M.SG 1.SG.OBL house-EZ.F.SG 1.SG.OBL  
‘my (male) friend’ ‘my (female) friend’
- (15) *heval-ên min*  
friend-EZ.PL 1.SG.OBL  
‘my friends’

Table (16) gives an overview of the different forms of the ezafe morpheme in Kurmancî ; cf. Wurzel (1997, p. 36) and Bedir Khan and Lescot (1970, pp. 72–92).<sup>4</sup> The indefinite forms of Kurmancî nouns are formed by adding the indefinite suffix *-(y)ek* in the singular and the suffix *-(y)in* in the plural. The indefinite stems can then be combined with special indefinite forms of the ezafe suffix.

(16) Forms of the ezafe morpheme

Definiteness	Masculine	Feminine	Plural
definite	(y)ê	(y)a	(y)ên
indefinite	(ek-)i	(ek-)e	(in-)e

The ezafe morpheme does however not only occur on the head noun to link it to a following modifier but every postnominal modifier has to be preceded by an

<sup>4</sup>In the spoken language, the form of the definite plural ezafe morpheme is often only *-(y)ê*. (cf. Bedir Khan and Lescot 1970, p. 75).

ezafe marker. If a noun is modified by multiple postnominal modifiers multiple instances of the ezafe marking have to be used; cf. examples (17) and (18). The additional ezafe markers all have to agree with the head noun in number and gender (and definiteness in some dialects).

- (17) *mal-a*                    [<sub>DP</sub> *min*]=*a*                    [<sub>AP</sub> *sor*]  
house-EZ.F.SG                    my=EZ.F.SG                    red  
‘my red house’
- (18) *mal-a*                    [<sub>AP</sub> *sor*]=*a*                    [<sub>NP</sub> *vi*]  
house-EZ.F.SG                    red=EZ.F.SG                    DEM.SG.OBL  
*mer-e]*  
man-SG.OBL  
‘this man’s red house’

These agreement facts often help to disambiguate the attachment of postnominal modifiers in more complex noun phrases; cf. examples (19) and (20).

- (19) *mal-a*                    [*bira-yê*                    *min*]=*a*                    [*piçûk*]  
house-EZ.F.SG    brother-EZ.M.SG    1.SG.OBL=EZ.F.SG    small  
‘my brother’s small house’ (Wurzel 1997, p. 26)
- (20) *mal-a*                    [*bira-yê*                    *min*=*ê*                    [*piçûk*]  
house-EZ.F.SG    brother-EZ.M.SG    1.SG.OBL=EZ.M.SG    small  
‘my small brother’s house’ (Wurzel 1997, p. 26)

Ghameshi (1996) proposes the following phonetic insertion rule for the ezafe in Persian.

**Ezafe Insertion Rule (Final Version)**

Insert the vowel -e on an X<sup>0</sup> that bears the feature [+N] and is followed by another non-affixal constituent within the same extended projection. (Ghameshi 1996, p. 132)

She thus regards the ezafe as an essentially phonological phenomenon triggered by syntactic configurations. Note that such an account which I already find implausible for Persian seems to be impossible for the Kurdish data given above. The ezafe marker in Kurmancî clearly exhibits syntactic agreement with the head noun and is used to convey definiteness information in some dialects. Moreover, examples (13)–(15) clearly show that the use of different forms of the ezafe morpheme cannot be argued to be phonologically conditioned because the same noun *heval* followed by the same modifier is used with different forms of the ezafe marking depending on the gender of the noun.

**2.2 Linear order of multiple postnominal modifiers**

When one noun is followed by multiple modifiers they occur in the linear order given in figure (21).

(21) N Prn AP , NP PP RelCl

A pronominal possessor obligatorily has to appear adjacent to the phrase it modifies. If there are multiple postnominal modifiers, it will thus always be first in linear order; cf. examples (22) and (23).

(22) *mal-a*                      *mın=a*                      *pıçûk*  
house-EZ.F.SG 1.SG.OBL=EZ.F.SG small  
‘my small house’

(23) \**mal-a*                      *pıçûk=a*                      *mın*  
house-EZ.F.SG small=EZ.F.SG 1.SG.OBL  
‘my small house’

Adjective phrases and nominal possessor phrases have to precede prepositional phrases and relative clauses but although nominal possessor phrases usually precede adjective phrases they can also follow them if the possessor phrase is relatively long (Wurzel 1997, p. 26); cf. examples (24) and (25).

(24) *mal-a*                      [*bıra-yê*                      *mın*]=*a*                      *pıçûk*  
house-EZ.F.SG brother-EZ.M.SG 1.SG.OBL=EZ.M.SG small  
‘my brother’s small house’ (Wurzel 1997, p. 26)

(25) *motor-a*                      *nû=ya*                      [*taxsi-ya*                      *şin=a*  
motor-EZ.F.SG new=EZ.F.SG car-EZ.F.SG blue=EZ.F.SG  
*bıra-yê*                      *mın=ê*                      *pıçûk*]  
brother-EZ.M.SG 1.SG.OBL=EZ.M.SG small  
‘the new motor of the blue car of my little brother’ (Wurzel 1997, p. 26)

I will therefore assume that the linear order between adjectival modifiers and full NP possessor phrases is not constrained by the syntax. As shown in example (27) prepositional phrases and relative clauses have to follow a possessor phrase.

(26) *mal-a*                      *xal-ê*                      *mın=a*                      *sere* *çiya*  
house-EZ.F.SG uncle-EZ.M.SG 1.SG.OBL=EZ.F.SG on mountain  
‘my uncle’s house on the mountain’

(27) *ap-ê*                      *mın=ê*                      *ku*                      *lı* *Ford-ê*  
uncle-EZ.M.SG 1.SG.OBL=EZ.M.SG RelPrn at Ford-SG.OBL  
*dı-xebit-e*  
DUR-work.PRES-2/3.SG  
‘my uncle who works at Ford’

I have no authentic examples that show the ordering possibilities between a prepositional phrase and a relative clause at this time. However, the order of the postnominal modifiers roughly reflects their heaviness and it is therefore likely that relative clauses will obligatorily occur last in a noun phrase with multiple postnominal modifiers.

### 2.3 The morphological status of the ezafe morpheme

In the examples above, I have glossed the ezafe morpheme as a suffix on the head noun but as a clitic on the modifiers. I have followed Kurdish orthographic practice (cf. e.g. Wurzel 1997). which treats the ezafe morpheme on the head noun as a part of that noun but the ezafe morphemes between two modifiers as independent particles. However, orthographic tradition is not the only evidence for this analysis. The grade of morphophonological integration of the ezafe marker on the head noun seems to be greater, consider example (28) which shows that the ezafe morpheme can cause stem alternations.

- (28) a. dê (mother) + a (EZ.F.SG) → diya  
 b. rê (way) + a (EZ.F.SG) → riya

These kinds of alternations do not seem to occur when the ezafe morpheme cliticizes onto the right edge of a modifier, cf. example (29).

- (29) *keç-a*                      *te=ya*                      *mezın*  
 daughter-EZ.F.SG    2.SG.OBL=EZ.F.SG    big  
 ‘your big daughter’

However, further study is needed to clarify this issue. A better argument for considering the ezafe on the head noun as a suffix is the fact that the ezafe in Kurmancî suppresses all other possible inflectional suffixes on the noun. The noun *mal* in (30) carries a case suffix because the noun phrase it heads is assigned oblique case by the verb. This suffix cannot appear if the noun is modified by a postnominal phrase such as the adjective phrase in (31); cf. the ungrammatical example (32). However, the whole noun phrase is still in the oblique case because the preceding demonstrative has to appear in its oblique form *vi*.

- (30) *ez*                      [<sub>NP</sub> *vi*                      *mal-e*]  
 1.SG.NOM                      DEM.SG.OBL    house-SG.OBL  
*di-bin-im.*  
 DUR-see.PRES-1.SG  
 ‘I see this house.’

- (31) *ez*                      [<sub>NP</sub> *vi*                      *mal-a*                      *sor*]  
 1.SG.NOM                      DEM.SG.OBL    house-EZ.F.SG    red  
*di-bin-im.*  
 DUR-see.PRES-1.SG  
 ‘I see this red house.’

- (32) \**ez*                      [<sub>NP</sub> *vi*                      *mal-e*                      *sor*]  
 1.SG.NOM                      DEM.SG.OBL    house-SG.OBL    red  
*di-bin-im.*  
 DUR-see.PRES-1.SG

The same phenomenon occurs when a possessor phrase, which usually would have to stand in the oblique case, is itself modified by a possessor phrase. In such cases, the modified possessor has to carry an *ezafe* suffix and cannot be used with case-marking morphology; cf. examples (33) and (34).

- (33) *mal-a*                      *jin-ê*  
house-EZ.F.SG   woman-F.SG.OBL  
‘the woman’s house’ (cf. also Wurzel 1997, p. 17)

- (34) *mal-a*                      *jin-a*                      *min*  
house-EZ.F.SG   woman-EZ.F.SG   1.SG.OBL  
‘my wife’s house’ (cf. also Wurzel 1997, p. 17)

The phonological and morphological interaction between the stem of the head noun and the *ezafe* morpheme thus represents good evidence for treating the *ezafe* morpheme as a suffix when it combines with the head noun. An *ezafe* morpheme that occurs between two postnominal modifiers also leans onto the preceding word phonologically but it neither causes stem alternations nor suppresses case marking on this word. Moreover, the placement of the *ezafe* marking in between two postnominal modifiers is also clearly syntactically determined and does not take the part of speech or inflectional form of the preceding word into account. A unified analysis of all *ezafe* markers as suffixes would therefore require an analysis of the *ezafe* morpheme between two modifiers as a phrasal affix in the sense of Zwicky (1994). Moreover, the Kurmancî analogue of the English *one* pronoun exemplified in (35) and (36) also seems to contain a form of the *ezafe* morpheme.

- |                                                                                                                            |                                                                                                                                                                             |
|----------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>(35) <i>ya</i>                      <i>min</i><br/> EZ.F.SG   1.SG.OBL<br/> ‘mine’ (feminine)<br/> (Wurzel 1997:25)</p> | <p>(36) <i>nav-ê</i>                      <i>yê</i>                      <i>mezın</i><br/> name-EZ.M.SG   EZ.M.SG   big<br/> ‘the big one’s name’<br/> (Wurzel 1997:31)</p> |
|----------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

However, I see no compelling reason that forces a unified analysis of the *ezafe* marking on the head noun and that between two modifiers and will therefore assume that the former is a suffix and the latter a particle and phonological clitic.

## 2.4 Constituency of the *ezafe* construction

In this section I discuss the question of the constituency of the *ezafe* construction which is important for the HPSG analysis that I will give in the following sections. My argumentation will mainly be based on a study of linking articles and other (formerly) deictic nominal elements by Himmelmann (1997).

I have argued in the preceding section that the *ezafe* morpheme that combines with the modified noun itself should be analyzed as a suffix. This means that this *ezafe* morpheme is morphologically bound to the modified noun and

therefore automatically forms a syntactic constituent with it. But although this could be taken as evidence for a left-branching structure in which the ezafe marker combines with the modified element and the resulting phrase then combines with the modifier phrase, cf. the structure in figure (39), it is not clear whether this analysis can also be applied to the clitic ezafe markers that stand in between two modifiers of the same noun. German prepositional phrases show that one cannot generalize the behavior of morphologically bound forms to morphologically free forms. The fused combination of preposition and definite article in example (37) is clearly a single word. However, it is normally not assumed that a non-fused article as in example (38) forms a constituent with the preposition before it combines with the noun it accompanies.

- (37) *am Hafen*  
 at.the harbor  
 ‘at the harbor’
- (38) [*neben [dem Hafen]*]  
 next to the harbor  
 ‘next to the harbor’

Figures (39)–(41) show three possible constituent structures for the Kurdish ezafe construction exemplified by the phrase *mala min a sor* (my red house).

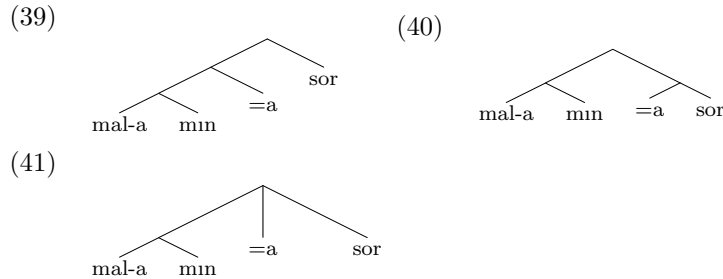


Figure (39) depicts a left-branching structure. In figure (40) the ezafe clitic forms a constituent with the modifying phrase which results in a right-branching structure. The third possibility is to assume that the ezafe clitic neither belongs to the preceding nor the following constituent but really stands between them; cf. figure (41).

In Kurdish only postnominal modifiers of a noun including adjective phrases, possessor phrases, prepositional phrases and relative clauses (all called attributes in Himmelmann 1997) have to occur with an ezafe linker. Prenominal elements such as demonstratives, quantifiers, and numerals (called operators in Himmelmann 1997) come before the noun and are not linked to it by ezafe marking; cf. examples (42) and (43).

- (42) *du ker*  
 two donkey  
 ‘two donkeys’
- (43) *va gişt kitab-an*  
 DEM all book-PL  
 ‘all these books’

One important piece of evidence for the constituency of linker constructions following Himmelmann (1997) is the position of the linker when the modifier

appears to the left of the noun if its “canonical position” is to the right and vice versa. As the linking article in Tagalog e.g. always stands in between the modifier and the modified no matter whether the modifier appears to the left or to the right of the noun, he concludes that it does not form a constituent with one of them separately (Himmelman 1997, pp. 160–165). In Albanian, in contrast, the linker also precedes the modifier when the modifier comes before the noun instead of following it and Himmelman (1997, pp. 165–172) therefore analyzes it as forming a constituent with the modifier. However, this sort of evidence does not seem to be available for Kurdish because all the (attributive) modifiers of the noun always follow it and never occur in prenominal position.<sup>5</sup> In contrast to Albanian where the linker also precedes the modifier when it is used in a copula clause, cf. example (44)<sup>6</sup>, the Kurdish ezafe is only used with modifiers inside the noun phrase; cf. examples (45) and (46).

- (44) *vajz-a*                      *është*                      *e*                      *bukur*  
 girl-DEF.F.SG.NOM    be.3.SG.PRES    LK.F.SG.NOM    pretty  
 ‘the girl is pretty’  
 (Himmelman 1997, chapter 5, example 23)

- (45) *keç-a*                      *min*                      *xweş-e*  
 girl-EZ.F.SG    1.SG.OBL    pretty-be.3.SG  
 ‘my girl is pretty’

- (46) *\*keç-a*                      *min*                      *a*                      *xweş-e*  
 girl-EZ.F.SG    1.SG.OBL    EZ.F.SG    pretty-be.3.SG  
 ‘my girl is pretty’

An ezafe clitic can occur without a preceding noun, but then it is interpreted pronominally.

- (47) *ya*                      *min*  
 EZ.F.SG    1.SG.OBL  
 ‘mine’ (feminine)  
 (Wurzel 1997:25)

In Albanian, the occurrence of the linking article depends on the lexical class of the modifier (Himmelman 1997, p. 167). There are no such lexical dependencies between the ezafe clitic and the following modifier. The form of the ezafe morpheme is only dependent on the number and gender of the modified noun.

<sup>5</sup>Persian occasionally seems to allow prenominal adjectives which are then used without any ezafe marking (Kahnemuyipour 2000).

<sup>6</sup>LK means linker. I have slightly changed the category abbreviations in order to keep them consistent with those used in the rest of this paper.

Let me sum up the evidence:

1. The *ezafe* linker always occurs in between the modified and the modifying phrase.
2. The occurrence of the *ezafe* linker depends on the occurrence of a post-nominal modifier.
3. The *ezafe* morpheme on the head noun is suffixal.
4. The *ezafe* morpheme between two modifiers is enclitic.
5. There are lexical dependencies between the modified noun and all *ezafe* markers (suffix and clitics).
6. There are no lexical dependencies between the *ezafe* marking and the modifiers.
7. The *ezafe* clitic can be used without a preceding noun in which case it is interpreted pronominally.

It seems that there is no compelling evidence that would strongly favor one of the structures proposed in figures (39)–(41). Points 2, 7 could be seen as evidence in favor of a right branching structure; points 3–6 could suggest an analysis in terms of a left branching structure. The third possibility of a flat structure also does not seem to be implausible.

Evidence from coordination does not resolve this question either. It rather makes things even more complicated. Example (48) shows that multiple modifiers can be coordinated and preceded by only one *ezafe* linker.

- (48) *mal-a*            *min*            *a*            *kevn* *û*    *şil*  
house-EZ.F.SG 1.SG.OBL EZ.F.SG old and humid  
‘My old and humid house.’ (Wurzel 1997:26)

- (49) \**mal-a*            *min*            *a*            *kevn* *û*    *a*            *şil*  
house-EZ.F.SG 1.SG.OBL EZ.F.SG old and EZ.F.SG humid  
‘My old and humid house.’

Example (49) in which the two conjuncts are individually preceded by an *ezafe* linker is ungrammatical. However, it is not entirely clear whether this is due to the constituency of the construction or the fact that the clitic cannot lean onto a conjunction.

The situation is parallel in a coordination of two nouns modified by the same phrase. Although it is usually argued that an affix cannot have scope over a syntactic coordination, only the last noun in the coordination carries an *ezafe* suffix. However, the fact that the form of this suffix only depends on the noun that carries it is further evidence for my claim that it indeed is an affix.

- (50) *Mızgin l şûna di-ya xwe l [xwisk û*  
 Mizgin instead mother-EZ.F.SG REFL on sister and  
*br-ê]* *xwe di-nêr-e.*  
 brother-EZ.M.SG REFL DUR-watch.PRES-2/3.SG  
 'Mızgin cares for her sisters and brother in her mother's stead.' (Wurzel 1997:63)

In the coordinate phrase *xwisk û brê*, the first noun is feminine but only the second masculine singular noun carries a masculine singular ezafe suffix. The same is true in example (51). This example also shows that further, clitic ezafe markers agree with the coordination of the two head nouns and not only with the last noun.<sup>7</sup>

- (51) [*Xwisk û bira-k-î*] *wê yên*  
 sister and brother-INDEF-EZ.M.SG.INDEF 3.SG.F.OBL EZ.PL  
*piçûk he-ne.*  
 small exist-PL.  
 'She has little sisters and a little brother.' (Wurzel 1997:63)

Unfortunately, I do not have enough data about other, more complicated coordination patterns to see whether any conclusive evidence can be gained from examining coordination.

To sum up, I have not been able to find conclusive evidence about the constituent structure of postnominal modification in Kurdish yet. This is a question that I hope to clarify with further research. In this paper, I will assume that the ezafe clitics behave in parallel to the ezafe suffix in combining first with the modified phrase. My main argument for this decision is that there are strong dependencies between the form of the ezafe clitics and the modified noun(s) which can be modeled in a more local and thus less complicated way if one assumes a left-branching structure as I will do in section 3.

### 3 HPSG analyses of postnominal modification in Kurdish

In this section I will sketch an analyses of postnominal modification in Kurmancî within the framework of Head-Driven Phrase-Structure Grammar. As has already become clear in the preceding sections, there are still many loose ends and unanswered questions that have to be resolved by further research. I will point out in the following sections whenever there is some problem or question that I cannot deal with thoroughly at this point because of lack of data.

I will start out in section 3.1 by giving a short outline of the general grammatical formalism that I will use namely sign-based construction grammar (cf.

<sup>7</sup>The ezafe clitic in this example does not agree in definiteness with the two nouns. The agreement behavior with regard to definiteness differs from dialect to dialect (cf. Wurzel 1997, p. 35).

Sag et al. 2003, chapter 16). Section 3.2 will present an analysis of the Kurdish *ezafe* as a marker of modification using proposals by van Eynde (2002) and van Eynde (2004). Section 4 concludes by summarizing open questions that should be answered by further research.

### 3.1 General approach: construction-based HPSG

In this paper, I will use a version of HPSG referred to as *sign-based construction grammar* in Sag et al. (2003). I will use the analyses in Sag et al. (2003) and Sag et al. (2004) as reference and model. *Sign-based construction grammar* still treats phrases and sentences as complex signs but it introduces a new distinction between *signs* which encode the phonological, pragmatic, semantic, and syntactic content of a linguistic expression and *constructions* which model constraints on the hierarchical structure of the expression. This reorganization has several advantages: First, *constructions* which supplant the grammar rules and schemata of earlier versions of HPSG are now also implemented as feature structures and can thus be organized into a type hierarchy. I will use this possibility throughout the following sections. Second, syntactic locality is more strictly enforced by the fact that *signs* no longer have daughters which are now features of *constructs* (or local trees of signs). Figure (52) provides information about the most general types employed in this theory; cf. Sag et al. (2003, chapter 16) and Sag et al. (2004).

Tectogrammatical constituent structure is modeled by constructs (*cx*) which have a *mother feature* (*MTR*) whose value is of type *sign* and a *daughters* feature (*DTRS*) whose value is a list of signs. The subtype *lexical-construct* (*lex-cx*) is used for the morphological combination of subword units. Two of its subtypes that I will use here are *inflectional-construct* (*infl-cx*) and *derivational-construct* (*deriv-cx*). The mother in an *infl-cx* is of type *word*, i.e. it is an expression that can be used to model syntactic combinations above the word level. Its *DTRS* feature takes a singleton list whose member is of type *lexeme*. Inflectional constructs thus model the formation of syntactic words by the combination of a stem with an affix. However, they also allow one to relate a *lexeme* to a *word* without adding phonological material (“null” inflection). Derivational constructs relate their *mother* which is of type *lexeme* to one or more *daughters* of type *lexeme*. They thus implement a theory of morphological derivation and compounding. Their *mother*, however, is a *lexeme* and thus still part of the lexicon. It has to be related to an *expression* of type *word* in order to be able to appear in a *phrasal-construct* (*phr-cx*), i.e. in a syntactic structure.

The values of the *mother* and *daughters* features of constructs are of different subtypes of the supertype *sign*. A sign in general consists of phonological information (*FORM*), syntactic information (*SYN*), and semantic information (*SEM*). An *expression* is a sign that can combine with other *expressions* in *phrasal-construct* (i.e. in a syntactic structure). The type *word* is a subtype of *expression*. It is used for complete words that are the leaves of a syntactic tree. *Lexeme* in contrast is used for signs in the lexicon which cannot be used in the syntactic structure without inflection or derivation. Both *lexeme* and *word* are

lexical signs (*lex-sign*). A *phrase* is a syntactically complex sign of type *expression*. I have included a *domain* feature (*DOM*) for phrases because I will use a version of Reape (1994) to model the word order in the Kurdish noun phrase.

(52)

TYPE	FEATURES/VALUE TYPES	IST
<i>cxt</i>	$\left[ \begin{array}{ll} \text{MTR} & \textit{sign} \\ \text{DTRS} & \textit{list}(\textit{sign}) \end{array} \right]$	<i>feat-struct</i>
<i>lex-cxt</i>	$\left[ \begin{array}{ll} \text{MTR} & \textit{lex-sign} \\ \text{DTRS} & \textit{list}(\textit{lex-sign}) \end{array} \right]$	<i>cxt</i>
<i>phr-cxt</i>	$\left[ \begin{array}{ll} \text{MTR} & \textit{phrase} \\ \text{DTRS} & \textit{list}(\textit{expression}) \end{array} \right]$	<i>cx</i>
<i>sign</i>	$\left[ \begin{array}{ll} \text{FORM} & \textit{list}(\textit{form}) \\ \text{SYN} & \textit{syn-obj} \\ \text{SEM} & \textit{sem-obj} \end{array} \right]$	<i>feat-struct</i>
<i>expression</i>		<i>sign</i>
<i>lex-sign</i>		<i>sign</i>
<i>phrase</i>	$\left[ \text{DOM} \quad \textit{list}(\textit{expression}) \right]$	<i>expression</i>
<i>word</i>		<i>expression &amp; lex-sign</i>
<i>lexeme</i>		<i>lex-sign</i>

The approach to construction grammar that I will use here generally follows the outline in Sag et al. (2004). Like them I distinguish between *constructs* and *constructions*. A *construct* can be regarded as the equivalent of a local tree. It has a *mother* and one or more *daughters* of type *sign*. Constructs are feature structures and can thus be ordered in a type hierarchy. A *construction* is a “defining constraint on a family of constructs” (Sag et al. 2004) of the form  $X\text{-cxt} \Rightarrow [\dots]$  that applies to all constructs which are of the type that stands on the left-hand side of the implication. I will flesh out the various subtypes of constructs, etc. in more detail in the following sections.

### 3.2 Basic constructions and principles

The data in section 2 has shown that the *ezafe* morpheme is a linker that has to be used with all postnominal modification in Kurdish. Although it does agree with the head noun of a nominal phrase in number and gender (and also def-

initeness in some dialects), it does not itself carry any semantic information. Often the *ezafe* marking disambiguates ambiguous phrases by being the only overt manifestation of the grammatical features person, number, and definiteness. But although it makes these features visible, it is not needed to introduce them and a non-modified noun still contains those features although they are not visible in the phonological form of the noun phrase; cf. examples (53) and (54).

(53) *Heval-a min xweş-e.*  
 friend-EZ.F.SG 1.SG.OBL pretty-be.2/3.SG  
 'My (female) friend is pretty.'

(54) *Heval xweş-e.*  
 friend pretty-be.2/3.SG  
 'The friend is pretty.'

The modification in example (53) in the form of a pronominal possessor demands the use of an *ezafe* affix which clearly marks the noun as being singular and feminine. The noun in example (54) is not modified and therefore not explicitly marked for number and gender. However, we still have to assume that it has these features. Its number e.g. is revealed by the subject-verb agreement in this example.

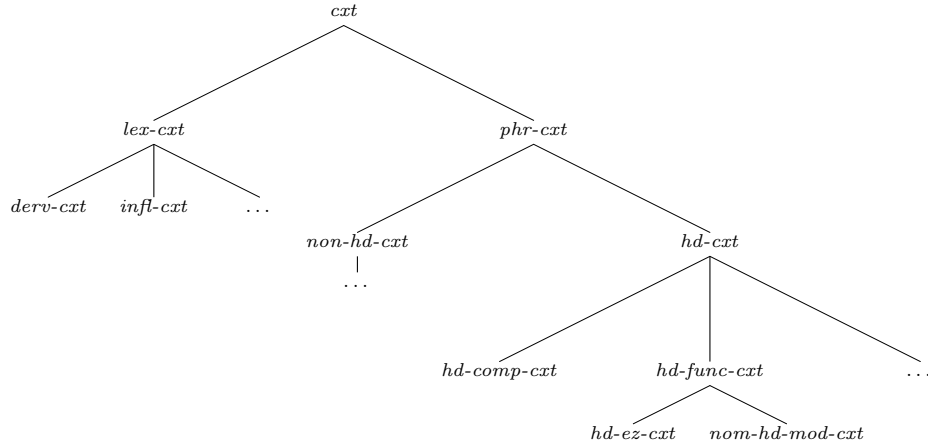
I thus assume that the *ezafe* morpheme is a grammatical marker of modification (in a wider sense) and that it does not have semantic content. A grammar of the Kurdish noun phrase must be able to constrain the *ezafe* marking to occur only in case a nominal phrase is modified postnominally and to constrain postnominal modification to only be possible with a preceding *ezafe* marking. The analyses in van Eynde (2002) and van Eynde (2004) deal with somewhat similar problems with regard to pronominal elements in the Dutch noun phrase.

Van Eynde rejects a separation of pronominal elements into different parts of speech such as determiner, quantifier, numeral, adjective, etc. He assumes that these pronominal elements are categorically heterogeneous but still behave alike in many respects e.g. with regard to the agreement within the noun phrase. He proposes to model all pronominal non-head elements in the Dutch noun phrase as functors which combine with the head in a head-functor phrase. As all postnominal modifiers in Kurdish behave alike in terms of *ezafe* marking, I will describe the combination of a modified phrase with a postnominal modifier in a similar way. Van Eynde makes use of a feature called *MARKING* which is shared between a functor daughter and the mother of a phrase (van Eynde 2002, pp. 340–341) in order to model the very intricate co-occurrence constraints between different nouns and pronominal elements and among the pronominal elements themselves. Although it is not the head of the phrase the functor daughter can thus mark the mother with a certain feature that is visible for the next functor that combines with the mother. The next higher functor can therefore constrain the value of the *MARKING* feature of the mother to be of a certain type and thus co-occurrence restrictions can be modeled very easily.

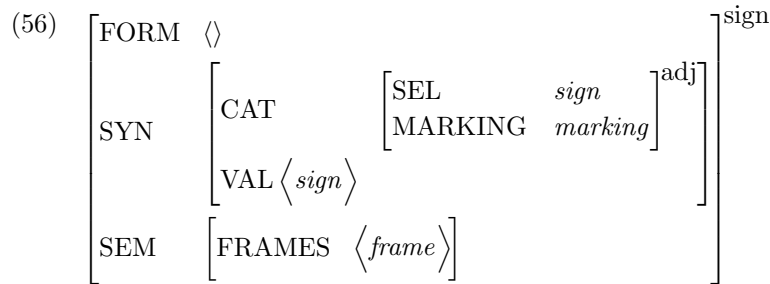
If a phrase has no functor daughter, its mother's MARKING value is identical to that of the head daughter.

I will now combine van Eynde's theory with the construction grammar approach outlined above. Figure (55) gives the (abbreviated) hierarchy of constructs that I will assume (cf. also Sag et al. 2003, p. 476).

(55)



I assume that the *ezafe* clitic first combines with the modified phrase in a *head-ezafe construct* which is a subtype of the type *head-functor construct*. A postnominal modifier of a noun then combines with a nominal phrase in a *nominal head-modifier construct*. I assume that both the *ezafe* clitics and the modifiers are functors and are thus able to specify the value of the mother's MARKING feature. I will limit my discussion of different constructs to only those immediately relevant to postnominal modification. I will follow van Eynde (2004) in positing a *SEL(lect)* feature for all functors which allows them to put restrictions on the heads with which they combine. The *SEL* feature as well as the MARKING feature are part of the SYN|CAT value of signs; cf. figure (56).



The construction given in figure (57) is an implementation of the *Head Feature Principle* as a constraint on constructs (Sag et al. 2004).

$$(57) \quad hd\text{-}cxt \Rightarrow \left[ \begin{array}{l} \text{MTR} \quad \left[ \text{SYN|CAT} \begin{array}{c} \boxed{1} \end{array} \right] \\ \text{HD-DTR} \quad \left[ \text{SYN|CAT} \begin{array}{c} \boxed{1} \end{array} \right] \end{array} \right]$$

In the account I am developing this constraint has to be defeasible in that the whole value of the CAT feature of the mother is not always equal to that of the head daughter. The value of CAT|MARKING instead has to be equal to that of the functor daughter in a head-functor construct. The construction provided in figure (58) enforces two constraints on all subtypes of *hd-func-cxt*. First, it ensures that MARKING value of the mother is identical to that of the functor daughter. I assume here that *head-functor constructs* are binary branching and the functor daughter can therefore be identified as that daughter which is not the value of the feature *HD-DTR*. Second, the construction in figure (58) also enables the functor daughter to restrict the range of heads with which it combines by identifying the value of the SEL feature of the functor with the value of the feature *HD-DTR*.

$$(58) \quad hd\text{-}func\text{-}cxt \Rightarrow \left[ \begin{array}{l} \text{MTR} \quad \left[ \text{SYN|CAT|MARKING} \begin{array}{c} \boxed{1} \end{array} \right] \\ \text{HDR} \quad \boxed{2} \\ \text{DTRS} \quad \left\langle \boxed{2}, \left[ \text{SYN|CAT} \quad \left[ \begin{array}{l} \text{MARKING} \begin{array}{c} \boxed{1} \end{array} \\ \text{SEL} \begin{array}{c} \boxed{2} \end{array} \end{array} \right] \right] \right\rangle \end{array} \right]$$

Figure (59) is another constraint that has to hold for head-functor constructs with phrasal a phrasal head daughter. It implements the *Domain Principle* of Reape (1994) which controls how the DOM lists of the daughters in a construct appear on the DOM list of the mother. Each daughter can either appear as a sign on the mother's DOM list or the elements of its DOM list can be shuffled into the mother's DOM list. I will assume here that the functor daughter always appears on the mother's DOM list as a sign, whereas the elements of the head daughter's DOM list are shuffled into the mother's DOM list (cf. Reape 1994, p. 155).

$$(59) \quad hd\text{-}func\text{-}cxt \Rightarrow \left[ \begin{array}{l} \text{MTR} \quad \left[ \text{DOM} \left\langle \boxed{1} \right\rangle \circ \boxed{3} \circ \dots \circ \boxed{n} \right] \\ \text{HDR} \quad \boxed{2} \left[ \text{DOM} \left\langle \boxed{3}, \dots, \boxed{n} \right\rangle \right]^{\text{phrase}} \\ \text{DTRS} \quad \left\langle \boxed{2}, \boxed{1} \right\rangle \end{array} \right]$$

A similar constraint holds for head-functor constructs with a non-phrasal head daughter; cf. figure (60). As the head daughter is not of type *phrase* and therefore does not have a DOM feature, the DOM list of the mother is simple a list of the functor daughter sign and the head daughter sign.

$$(60) \quad hd\text{-}func\text{-}cxt \Rightarrow \left[ \begin{array}{l} \text{MTR} \quad \left[ \text{DOM} \langle \boxed{1} \rangle \circ \langle \boxed{2} \rangle \right] \\ \text{HDR} \quad \boxed{2} \left[ \right]^{\text{word}} \\ \text{DTRS} \quad \langle \boxed{2}, \boxed{1} \rangle \end{array} \right]$$

The following *Constituent Ordering Principle* taken from Reape (1994, p. 155) regulates how the FORM list of a phrasal sign is built up from its the DOM list.

$$(61) \quad phrase \Rightarrow \left[ \begin{array}{l} \text{FORM} \quad \boxed{1} \oplus \dots \oplus \boxed{n} \\ \text{DOM} \quad \left\langle \left[ \text{FORM} \boxed{1} \right], \dots, \left[ \text{FORM} \boxed{n} \right] \right\rangle \end{array} \right]$$

In order to model the agreement of the *ezafe* morphemes with the head noun, I assume that the value of the CAT feature of nominal expressions is a feature structure of type *nominal* that contains values for the features CASE and DEF(initeness); cf. figure (62).

$$(62) \quad nominal \Rightarrow \left[ \begin{array}{ll} \text{DEF} & \text{defvalue} \\ \text{CASE} & \text{casevalue} \end{array} \right]$$

The possible values for DEF are either *+* or *-*. I posit a syntactic feature for the definiteness of a noun in contrast to Sag et al. (2004) because the *ezafe* marking in some dialects also agrees in definiteness with the head noun. The possible values of the feature CASE are *nom* for nominative and *obl* for oblique.

Because of examples like (51) in which the clitic *ezafe* marker agrees with the coordination of two nouns, I conclude this kind of agreement should be handled by the semantic index features. Kurmancî allows the values *sg* and *pl* for the feature NUM, and the values *masc* and *fem* for the feature GENDER.<sup>8</sup>

After having established the basic machinery, I can now explain the way the combination of the MARKING and the SEL feature can be used to model the connection between postnominal modification and *ezafe* marking Kurdish. In figure (56), I specified the value of the MARKING feature to be of type *marking*. The following type hierarchy shows the different subtypes that can appear as values of the MARKING feature.

$$(63) \quad \begin{array}{c} \text{marking} \\ \swarrow \quad \searrow \\ \text{ezafe} \quad \text{unmarked} \end{array}$$

The subtype *ezafe* will be used for phrases that have combined with an *ezafe* morpheme, either the suffix or a clitic. *Unmarked* is used for phrases that have

<sup>8</sup>As gender distinctions are systematically neutralized in the plural, one could alternatively collapse number and gender into a combined feature NUMGEN with the possible values *masc,fem,pl* (cf. van Eynde 2004, p. 7).

not combined with an ezafe marker. Section 3.2.1 outlines the treatment of the ezafe suffix, while section 3.2.2 explains how the interaction of modification and the clitic ezafe marker is handled.

### 3.2.1 Morphology

An important fact about the ezafe in Kurdish is that head noun of a modified noun phrase itself is marked with suffixal ezafe morpheme. I therefore propose an *ez-infl-ctx* construction as a subtype of *infl-ctx* which combines a lexeme of type *noun* with the appropriate ezafe suffix to yield an inflected word; cf. figure (64).

$$(64) \quad ez\text{-}infl\text{-}ctx \Rightarrow \left[ \begin{array}{l} \text{MTR} \quad \left[ \begin{array}{ll} \text{FORM} & F_{ez}(\underline{1}) \\ \text{SYN|CAT|MARKING} & \text{ezafe} \end{array} \right]^{word} \\ \text{DTRS} \quad \left\langle \underline{1} \left[ \text{SYN|CAT} \quad \textit{noun} \right]^{lexeme} \right\rangle \end{array} \right]$$

The actual phonological form of the resulting word is determined by the morphological function  $F_{ez}$  which maps noun stems to nouns with the appropriate ezafe suffix and takes the nouns gender, number, and definiteness into account. The *ez-infl-ctx* also marks the resulting *word* with the feature MARKING ezafe.

The complementarity of the ezafe suffix with case-marking morphology comes about because both the ezafe inflection construction and the case-marking inflection construction are of type *infl-ctx* which map from a *lexeme* to a *word*. A *lexeme* can therefore never be related to a *word* that is both ezafe and case marked. The non-complementarity of the indefinite suffixes *-(y)ek* and *-(y)in* with both ezafe and case marking follows if we assume that the indefinite suffixes are derivational morphemes.

$$(65) \quad indef\text{-}deriv\text{-}ctx \Rightarrow \left[ \begin{array}{l} \text{MTR} \quad \left[ \begin{array}{ll} \text{FORM} & F_{indef}(\underline{1}) \\ \text{SYN|CAT|DEF} & - \end{array} \right]^{lexeme} \\ \text{DTRS} \quad \left\langle \underline{1} \left[ \text{SYN|CAT} \quad \textit{noun} \right]^{lexeme} \right\rangle \\ \text{C-CONT} \quad \left[ \begin{array}{ll} \text{LTOP} & \underline{h1} \\ \text{FRAMES} & \left\langle \left[ \quad \right] \textit{indef-rel} \right\rangle \end{array} \right] \end{array} \right]$$

The *indef-deriv-ctx* adds the appropriate form of the indefinite suffix and specifies the feature SYN|CAT|DEF to be  $-$ . The construction will presumably also have constructional semantic content that introduces semantic information about the indefiniteness of the noun (Sag et al. 2004, p. 22).

### 3.2.2 Syntax

In the constructional hierarchy in figure (55), I already introduced the two constructs *hd-ez-ctx* (head *ezafe* construct) and *nom-hd-mod-ctx* (nominal head-modifier construction). The head *ezafe* construct is used to model the combination of a clitic *ezafe* marker with a modified noun phrase. The constructional constraints on this type are shown in figure (66).

(66)

$$\begin{array}{l}
 \text{hd-ez-ctx} \Rightarrow \\
 \left[ \begin{array}{l}
 \text{MTR} \quad \boxed{2} [\text{SYN|CAT|MARK} \quad \boxed{1}] \\
 \text{HDR} \quad \boxed{2} \\
 \text{DTRS} \quad \left\langle \boxed{2}, \left[ \text{SYN|CAT} \quad \left[ \begin{array}{l}
 \text{MARK} \quad \boxed{1} \text{ ezafe} \\
 \text{SEL} \quad \boxed{2} [\text{SYN|CAT|MARK} \text{ unmarked}] \textit{phrase} \end{array} \right] \right] \right\rangle \right]
 \end{array} \right]
 \end{array}$$

A clitic *ezafe* marker can only combine with a head that is of type *phrase* and not of type *word*. This ensures that the *ezafe* marker on the head noun which is a *word* can never be the clitic version but only an *ezafe* suffix. Just like the affixal *ezafe* morpheme in the preceding section, the clitic *ezafe* morpheme, too, marks the mother of the construct with the value *ezafe*. Moreover, agreement of the *ezafe* with the modified noun phrase is enforced by the identification of the head daughter with the value of the *ezafe* clitic's SEL feature.

The construction *nom-hd-mod-ctx* in figure (67) licences the phrasal combination of an *ezafe* marked noun (*phrase*) with a modifier.

(67) *nom-hd-mod-ctx*  $\Rightarrow$

$$\left[ \begin{array}{l}
 \text{MTR} \quad \boxed{2} [\text{SYN|CAT|MARK} \quad \boxed{1}] \\
 \text{HDR} \quad \boxed{2} \\
 \text{DTRS} \quad \left\langle \boxed{2}, \left[ \text{SYN|CAT} \quad \left[ \begin{array}{l}
 \text{MARK} \quad \boxed{1} \text{ unmarked} \\
 \text{SEL} \quad \boxed{2} [\text{SYN|CAT|MARK} \text{ ezafe}] \end{array} \right] \right] \right\rangle \right]
 \end{array} \right]$$

A modifier can only combine with a head daughter whose SYN|CAT|MARKING value is *ezafe*. The obligatory occurrence of an *ezafe* marking of some form is thus enforced. The MARKING value of the mother changes back to unmarked so that a further modifier cannot combine with the mother directly but requires another *ezafe* marking to combine with the mother first. Via the SEL feature, the modifying phrase can put various constraints on the modified phrase. As the Head Feature Principle identifies the CAT value of the head daughter with the CAT value of the mother, the semantics of modification in my approach can be modeled exactly as if the modifier combined with the head daughter directly without *ezafe* marking; see e.g. Sag et al. (2003) and Sag et al. (2004). Alternatively, the semantics of the mother could be constructed by assuming

that there are several subtypes of the construction *nom-hd-mod-ctt* e.g. for possessive constructions, adjectival modifiers, etc. that specify in the value of their C-CONT feature how the semantics of the head daughter and the functor daughter should be combined.

I see basically two approaches how one could model the pronominal *ezafe* that occurs without a preceding head noun as in example (47). One is to assume as van Eynde (2004, p. 55) does for Dutch that a clitic *ezafe* marker can combine with a special *non-canonical-sign* that does not have phonetic content; cf. figure (68).

$$(68) \left[ \begin{array}{l} \text{FORM} \quad \langle \rangle \\ \text{SYN} \quad \left[ \text{CAT|MARKING} \quad \text{unmarked} \right]^{\text{noun}} \\ \text{SEM|FRAMES} \quad \langle \rangle \end{array} \right]^{phrase}$$

This phonetically empty element would then have to be of type *phrase* in order to be able to combine with clitic *ezafe* markers. Presumably, there would also have to be six different phonetically empty fully resolved noun feature structures for all combinations of the values of the features number, gender, and definiteness which might be imposed as restrictions on the modified phrase via identification with the SEL feature. A simpler alternative is available for Kurdish, however, because even if there is no overt noun that is modified the marker of postnominal modification always has to be present. I therefore assume that there is a special pronominal version of the clitic *ezafe* which can be used without a preceding noun. Such an approach has been proposed for head-marking possessive constructions in Kathol (2001) and also by myself in Strunk (2004).

Last but not least, my grammar has to ensure that *ezafe* marked nouns have to be obligatorily modified before they can be used as arguments of other heads; cf. example (12). I suggest that all heads that select a noun phrase constrain that noun phrase to have the SYN|CAT|MARKING value *unmarked*. This solution is in line with those proposed in van Eynde (2004, p. 17) and Sag et al. (2004, p. 5).

### 3.2.3 Linearization

My implementation of the Domain Principle and the Constituent Ordering Principle from Reape (1994) in figures (59)–(61) ensures that all functor daughters are put on the DOM list of the mother as signs whereas the DOM list of the modified head daughter is shuffled into the mother’s DOM list. This already correctly predicts that the modifiers cannot appear discontinuously but always form a continuous NP, AP, or PP. It correctly predicts that there can be different orderings of the various (complex) modifiers that follow the noun.

Figures (69)–(74) give the linear precedence principles that I assume hold in the DOM list of a modified noun that contains all its postnominal modifiers and *ezafe* markers. I use *X* to denote any sign on the DOM list in question and *XP* to denote any phrasal sign.

- (69)  $\left[ \text{HDR}_{\text{noun}} \left[ \begin{array}{c} \boxed{1} \\ \boxed{\phantom{1}} \end{array} \right] \right] \Rightarrow \left[ \text{DOM} \left[ \boxed{1} \preceq \text{X} \right] \right]$
- (70)  $\left[ \text{HDR}_{\text{noun}} \left[ \begin{array}{c} \phantom{1} \\ \phantom{1} \end{array} \right] \right] \Rightarrow \left[ \text{DOM} \left[ \text{SYN|CAT|PRON} \ + \right] \preceq \text{XP} \right]$
- (71)  $\left[ \text{HDR}_{\text{noun}} \left[ \begin{array}{c} \phantom{1} \\ \phantom{1} \end{array} \right] \right] \Rightarrow \left[ \text{DOM} \left[ \text{SYN|CAT} \ \textit{clause} \right] \succeq \text{X} \right]$
- (72)  $\left[ \text{HDR}_{\text{noun}} \left[ \begin{array}{c} \phantom{1} \\ \phantom{1} \end{array} \right] \right] \Rightarrow \left[ \text{DOM} \left[ \text{SYN|CAT} \ \textit{prep} \right] \succeq \left[ \text{SYN|CAT} \ \textit{noun} \right] \right]$
- (73)  $\left[ \text{HDR}_{\text{noun}} \left[ \begin{array}{c} \phantom{1} \\ \phantom{1} \end{array} \right] \right] \Rightarrow \left[ \text{DOM} \left[ \text{SYN|CAT} \ \textit{prep} \right] \succeq \left[ \text{SYN|CAT} \ \textit{adj} \right] \right]$
- (74)
- $$\left[ \text{HDR}_{\text{noun}} \left[ \begin{array}{c} \phantom{1} \\ \phantom{1} \end{array} \right] \right] \Rightarrow$$
- $$\left[ \text{DOM} \left\langle \dots, \left[ \text{SYN|CAT|MARK} \ \textit{unmarked} \right], \left[ \text{SYN|CAT|MARK} \ \textit{ezafe} \right], \dots \right\rangle \right]$$

Figure (69) states that the head noun has to occur in first position in the DOM list. That pronouns precede all other, phrasal modifiers is expressed in figure (70). Figure (71) models the fact that a clausal modifier, i.e. a relative clause, is always the rightmost modifier. Figures (72) and (73) ensure that prepositional phrases have to follow all adjective phrases and possessor phrases. The linear precedence relations between the modifiers could thus be modeled in a straightforward manner. However, the linear precedence rule for the clitic *ezafe* morphemes themselves is a little unconventional in that it specifies the possible left and right neighbors of every *ezafe* morpheme to have a SYN|CAT|MARKING feature with the value *unmarked*. As both the head noun and the *ezafe* markers themselves have the MARKING value *ezafe*, the clitic *ezafe* markers can only stand in between two modifiers which will have a MARKING feature with the value *unmarked*.

## 4 Conclusion

In the preceding sections, I have given an overview over postnominal modification in Kurmancî, a dialect of the Indo-Iranian language Kurdish. I have also sketched a possible analysis of the *ezafe* markers which obligatorily have to link all postnominal modifiers to the modified phrase in an HPSG construction grammar framework. As already announced in the introduction to this paper, this is only a first sketch which I plan to further develop by clarifying questions

about the data and collecting more, and more detailed data on the one hand and by fleshing out the HPSG analysis or even trying out alternative analyses on the other hand.

Questions about the linguistic data which should be investigated in the future include:

1. Is there further evidence e.g. from coordination that would clarify the constituent structure with regard to the *ezafe* markers?
2. How does coordination in general function in Kurmancî?
3. How do complements of nouns behave in relation to postnominal modifiers?
4. Is there further evidence for the affix/clitic distinction I have made throughout this paper?
5. Are there further or different restrictions on the linear order of multiple postnominal modifiers?
6. Is the agreement of the *ezafe* with the head noun in definiteness still productively used?

My sketch of an HPSG analysis has also raised many questions:

1. Should the agreement between the *ezafe* morpheme and the head noun be treated as index agreement?
2. The linear precedence rule that I posit for the *ezafe* morpheme is highly unconventional. Would an analysis that posits a different constituent structure result in linear precedence rules which are more standard?
3. Or should I abandon the domain union approach entirely and model the linear precedence relations e.g. by employing a more complicated hierarchy of values for the feature MARKING as e.g. in van Eynde (2004).
4. How should the semantics of different postnominal modifiers best be modeled?

Although this paper has clearly raised as many questions as it has answered, I hope to have at least given a thorough introduction into the phenomenon *ezafe* and a first sketch of a possible HPSG analysis. I hope to be able to develop a more sound and detailed account of the structure of the Kurdish noun phrase in the future.

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