

# What's in a determiner and how did it get there?

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## Abstract

This investigates the determiner systems of three unrelated languages (Blackfoot, German, and Halkomelem). It is shown that the features encoded in determiners vary within and across languages in content, distribution, and spell-properties. It is argued that the distributional differences are best understood as being a reflex of the familiar difference between heads and modifiers. It is thus argued that features are to be viewed as regular linguistic objects which participate in the syntactic operation MERGE. Furthermore, it is argued that the spell-out differences of determiner features can be accounted for if we recognize a distinction between early and late insertion of functional morphemes.

## 1 Introduction

In this chapter I explore the composition of morphological features expressed in determiners (henceforth d-features). My core goal is to establish that d-features vary cross-linguistically in terms of their formal properties. Specifically, I wish to establish that d-features divide into two classes: i) features that are inherent to determiners; ii) and features that modify determiners. This distinction is purely formal in nature and as such independent of feature content as evidenced by the fact that d-features similar in content differ formally across languages. I investigate the determiner systems across three unrelated languages: German (Germanic), Halkomelem (Central Coast Salish), and Blackfoot (Algonquian).

Given that languages differ in the feature composition of their determiners, it becomes essential to define determiners independent of their feature composition. That is, given that feature composition of determiners is not universally determined, the question arises as to what makes determiners a natural class in the first place? For the purpose of this study, I assume that determiners constitute a natural class because they are associated with a universal core function, namely to turn nominal predicates into arguments (Longobardi, 1994, Stowell, 1989).<sup>1</sup> On some accounts this basic function of determiners correlates with the ability to turn a predicate into a referring expression (for discussion see for example Carlson 1980). This function appears to be attested in many languages across the world including the three languages under investigation in this paper:

- (1) German  
a. Maria ist [Lehrerin]<sub>NP</sub> NP= predicative  
Mary is teacher  
'Mary is a teacher.'

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<sup>1</sup> After completing the manuscript I have started to explore the hypothesis that vocabulary items which introduce argument nominals are not a unified category but instead can occupy different functional categories (cf. Szabolcsi 1983, Giusti 1991). In particular, I am currently entertaining the hypothesis that the Halkomelem determiners occupy the functional category NUMBER (Wiltschko 2008). Whatever turns out to be the correct analysis, the main point I argue for in this paper still holds: feature composition of determiner systems is syntactically conditioned and subject to variation.

- b. Maria sah **[die Lehrerin]**<sub>DP</sub> DP = argument  
*Mary saw DET teacher*  
 ‘Mary saw the teacher.’
- (2) Halkomelem
- a. **[swíyeqe]**<sub>NP</sub> te í:mex NP= predicative  
*man DET walk*  
 ‘It’s the man that’s walking.’
- b. í:mex **[te swíyeqe]**<sub>DP</sub> DP = argument  
*walk DET man*  
 ‘the man is walking.’
- (3) Blackfoot
- a. amo **[piíta]**<sub>NP</sub> NP = predicative  
*DEM eagle*  
 ‘This is an eagle.’
- b. nit-ano-a **[oma piíta]**<sub>DP</sub> DP = argument  
*I-see.TR-3 DET eagle*  
 ‘I saw the eagle.’

The paper is structured as follows. In section 2, I investigate the feature content of determiners and I show that d-features are only partly identical across the three languages under investigation. In section 3, I investigate the syntactic properties of d-features and I demonstrate that they are associated with different distributional properties. Specifically, I show that identical feature content does not imply identical formal properties and conversely identity in formal properties does not imply identity in feature content. In section 4, I show that there are two principled ways in which d-features can be spelled out (i.e., be associated with phonetic content) and that this difference is independent of either their content or their syntactic properties. Section 5 concludes.

## 2. What’s in a determiner?

The purpose of this section is to investigate the inventory of d-features in terms of their content. I show that the three languages under investigation have some but not all features in common suggesting that the selection of feature content varies across different languages and even within a single language.

### 2.1 The content of d-features in German

Among the three languages under investigation, German is by far the best described language with many analyses that seek to understand the paradigmatic organization of the determiner system (see for example Müller 2002). German thus serves as the point of departure for the comparative investigation of the d-features in the two lesser studied languages, Halkomelem and Blackfoot. Restricting the discussion to the definite determiner, we observe that within any given syntactic position it encodes a number of distinct features. First, the form of the determiner co-varies with the [gender] of the noun it precedes, as illustrated in (4).

- (4) [gender]
- |    |               |            |    |              |              |    |               |              |
|----|---------------|------------|----|--------------|--------------|----|---------------|--------------|
| a. | <b>der</b>    | Mann       | b. | <b>die</b>   | Frau         | c. | <b>das</b>    | Kind         |
|    | <i>D.MASC</i> | <i>man</i> |    | <i>D.FEM</i> | <i>woman</i> |    | <i>D.NEUT</i> | <i>child</i> |
|    | 'the man'     |            |    | 'the woman'  |              |    | 'the child'   |              |

This establishes that [gender] is among the d-features of German determiners. Next, we observe that German determiners also encode a difference in [number]: [singular] (henceforth [sg]) versus [plural] (henceforth [pl]), respectively.<sup>2</sup> The plural determiner no longer encodes a difference in [gender], in other words it neutralizes the [gender] distinction. We thus have to slightly revise the d-features in the glosses for the German examples: a determiner which encodes [gender] also encodes a value for [number], namely [sg] as in (5a, c,e). In contrast a plural determiner leaves [gender] unspecified as in (5b,d,f).

- (5) [number]
- |    |                  |              |    |                |                 |
|----|------------------|--------------|----|----------------|-----------------|
| a. | <b>der</b>       | Mann         | b. | <b>die</b>     | Männ-er         |
|    | <i>D.MASC.SG</i> | <i>man</i>   |    | <i>D.PL</i>    | <i>man-PL</i>   |
|    | 'the man'        |              |    | 'the men'      |                 |
| c. | <b>die</b>       | Frau         | d. | <b>die</b>     | Frau-en         |
|    | <i>D.FEM.SG</i>  | <i>woman</i> |    | <i>D.PL</i>    | <i>woman-PL</i> |
|    | 'the woman'      |              |    | 'the women'    |                 |
| e. | <b>das</b>       | Kind         | f. | <b>die</b>     | Kind-er         |
|    | <i>D.NEUT.SG</i> | <i>child</i> |    | <i>D.PL</i>    | <i>child-PL</i> |
|    | 'the child'      |              |    | 'the children' |                 |

Another feature which determiners in German encode is [case]. The value of this feature is determined by the position of the nominal phrase within the clause and therefore we need to consider them in different syntactic positions: in (6a) the subject receives [nom(inative)], the object receives [acc(usative)], and the possessor receives [gen(itive)]; in (6b) the object receives [dat(ive)].

- (6) [case]
- |    |  |            |            |                      |                |                      |                |                 |
|----|--|------------|------------|----------------------|----------------|----------------------|----------------|-----------------|
| a. | <b>der</b>                               | Mann       | hat        | <b>den</b>           | Apfel          | des                  | Schülers       | gegessen        |
|    | <i>D.MASC.SG.NOM</i>                     | <i>man</i> | <i>AUX</i> | <i>D.MASC.SG.ACC</i> | <i>apple</i>   | <i>D.MASC.SG.GEN</i> | <i>student</i> | <i>eat.PART</i> |
|    | 'The man has eaten the student's apple.' |            |            |                      |                |                      |                |                 |
| b. | <b>der</b>                               | Mann       | hat        | <b>dem</b>           | Schüler        | geholfen             |                |                 |
|    | <i>D.MASC.SG.NOM</i>                     | <i>man</i> | <i>AUX</i> | <i>D.MASC.SG.DAT</i> | <i>student</i> | <i>help.PART</i>     |                |                 |
|    | 'The man has helped the student.'        |            |            |                      |                |                      |                |                 |

Since the determiner co-varies with syntactic position we can conclude that [case] is among the d-features of German determiners. Note that we need to revise the glosses for the German determiners to include [case]. Above the [case] distinction is illustrated based on a [masc(uline)]

<sup>2</sup> Here I adopt the convention to use the full name for a d-feature (such as [number]) and an abbreviation for a particular value of a given d-feature (such as [sg]).

form. Table 1 summarizes the [case] forms across the remaining [gender] and [number] values. As shown in Table 1, [case] is distinguished across all three [gender]’s and the two [number]’s.<sup>3</sup>

	[sg]			[pl]		
	[masc]	[fem]	[neut]	[masc]	[fem]	[neut]
[nom]	<i>der</i>	<i>die</i>	<i>das</i>	<i>die</i>		
[acc]	<i>den</i>	<i>die</i>	<i>das</i>	<i>die</i>		
[dat]	<i>dem</i>	<i>den</i>	<i>dem</i>	<i>den</i>		
[gen]	<i>des</i>	<i>der</i>	<i>des</i>	<i>der</i>		

Table 1. The German determiner system

Finally, if we include demonstratives among the set of determiners, then we also need to include [location] among the set of d-features. In German there are two types of demonstratives: one encodes proximity [prox(imate)] while the other encodes distance [dist(al)].

- (7) a. Ich habe **diesen** Mann gesehen  
*Isg have D.PROX.MASC.SG.ACC man see.PART*  
‘I’ve seen this man.’  
b. Ich habe **jenen** Mann gesehen.  
*Isg have D.DIST.MASC.SG.ACC man see.PART*  
‘I’ve seen that man.’

Demonstratives display a paradigmatic organization identical to that of definite determiners: they encode [gender], [number] and [case], as illustrated in Tables 2 and 3 below:

[prox]	[sg]			[pl]		
	[masc]	[fem]	[neut]	[masc]	[fem]	[neut]
[nom]	<i>dieser</i>	<i>dieser</i>	<i>dieses</i>	<i>diese</i>		
[acc]	<i>diesen</i>	<i>diese</i>	<i>dieses</i>	<i>diese</i>		
[dat]	<i>diesem</i>	<i>dieser</i>	<i>diesem</i>	<i>diesen</i>		
[gen]	<i>dieses</i>	<i>dieser</i>	<i>dieses</i>	<i>dieser</i>		

Table 2: the d-features of [prox] determiners

[dist]	[sg]			[pl]		
	[masc]	[fem]	[masc]	[fem]	[masc]	[fem]
[nom]	<i>jener</i>	<i>jener</i>	<i>jenes</i>	<i>diese</i>		
[acc]	<i>jenen</i>	<i>jene</i>	<i>jenes</i>	<i>diese</i>		
[dat]	<i>jenem</i>	<i>jener</i>	<i>jenem</i>	<i>jenen</i>		
[gen]	<i>jenes</i>	<i>jener</i>	<i>jenes</i>	<i>jener</i>		

Table 3: the d-features of [dist] determiners

<sup>3</sup> There are some syncretic forms, but for the present purposes it suffices that across all four [case]’s there are always at least two distinct forms ([fem] and [pl]), but sometimes three ([neut]) and even four ([masc]) distinct forms. I assume that the presence of a two-way split justifies the postulation of a d-feature. See Müller 2002, Blevins 1995, Karttunen 1984 for relevant discussion of syncretic forms.

Given that definite determiners on the one hand and demonstratives on the other hand display the exact same feature content it seems justified to treat both as belonging to the set of determiners (contra Giusti 1991). This is further supported by the fact that determiners and demonstratives are in complementary distribution as illustrated below.

- (8) a. \*Ich habe **diesen** **den** Mann gesehen.  
       *I have this the man seen*  
       b. \*Ich habe **den** **diesen** Mann gesehen  
       *I have the this man seen*

We have now established the feature content of German determiners (including demonstratives):

- (9) German  
       d-features = ([gender], [number], [case], [location])<sup>4</sup>

In (9), the d-features encoded are merely listed, but it should be clear from the preceding discussion that the d-features of German differ in terms of their distribution. For example, [case] is encoded in all determiners while [location] is not. Taking different distributional properties as being indicative of a significant syntactic difference, we have a first indication that d-features might not constitute a homogenous class but instead that they differ in terms of their categorical identity.

## 2.2 Halkomelem<sup>5</sup>

Let us first consider [gender] in Halkomelem. We observe that Halkomelem has a special determiner for feminine nouns. Thus, if we take the ability to vary with the [gender] of a noun as a criterial diagnostic for the existence of [gender], we may conclude that Halkomelem, like German, includes [gender] among its set of d-features:

- (10) [gender]  
       a. *te swiyeqe*                      b. *the slhali*  
           *D<sup>6</sup> man*                              *D.FEM woman*

Similarly, on the basis of the examples in (11) we might conclude that [number] is among the set of d-features in Halkomelem. Specifically, we observe that the determiner varies with the plurality of the noun just like it does in German. And moreover, we also observe rather strikingly that [number] marking neutralizes [gender] marking just like it does in German. That is, the plural marker does not make a distinction between masculine and feminine forms.

<sup>4</sup> For the purpose of this paper I ignore “definiteness” as a d-feature. The reason for this decision has to do with the fact that definiteness is not encoded across all determiners (see Gillon, this volume for discussion) and second even if it is encoded (like in English) it does not paradigmatically contrast with its opposition (indefiniteness). Specifically, it has been argued that the so called indefinite article (*ein*) has a categorial identity distinct from definite determiners: it occupies NUMBER (see for example Borer 2004).

<sup>5</sup> Halkomelem is a Central Coast Salish language spoken on the West Coast of British Columbia. There are three main dialects. If not otherwise noted, the data reported in this chapter are from the Upriver dialect. The data are written in the official orthography of the Stó:lo Nation (see Galloway 1980 for a key).

<sup>6</sup> The reason for not glossing *te* as a masculine determiner will become clear in section 3.

- (11) [number]
- |    |              |              |    |             |                 |
|----|--------------|--------------|----|-------------|-----------------|
| a. | te           | swiyeqe      | b. | ye          | sewiyeqe        |
|    | <i>D</i>     | <i>man</i>   |    | <i>D.PL</i> | <i>man.PL</i>   |
|    |              | ‘the man’    |    |             | ‘the men’       |
| c. | the          | slhali       | d. | ye          | slhelhali       |
|    | <i>D.FEM</i> | <i>woman</i> |    | <i>D.PL</i> | <i>woman.PL</i> |
|    |              | ‘the woman’  |    |             | ‘the women’     |

Since [case] is a feature that depends on the syntactic position of the DP we need to consider DPs in different syntactic positions as in the examples in (12).

- (12) [case]
- |    |                        |              |               |               |                        |
|----|------------------------|--------------|---------------|---------------|------------------------|
| a. | kw’ets-l-exw-es        | tl’          | Strang        | te            | Konrad                 |
|    | <i>see-TRANS-3O-3S</i> | <i>D.ERG</i> | <i>Strang</i> | <i>D</i>      | <i>Konrad</i>          |
|    |                        |              |               |               | ‘Strang saw Konrad.’   |
| b. | ímex                   | te           | Strang.       |               |                        |
|    | <i>walk</i>            | <i>D</i>     | <i>Strang</i> |               |                        |
|    |                        |              |               |               | ‘Strang was walking.’  |
| c. | hikw                   | te           | pus           | tl’           | Strang                 |
|    | <i>big</i>             | <i>D</i>     | <i>cat</i>    | <i>D.POSS</i> | <i>Strang</i>          |
|    |                        |              |               |               | ‘Strang’s cat is big.’ |

On the basis of these examples we might conclude that Halkomelem encodes a distinction in [case]: the form of the determiner varies across different [case] positions. *tl’* is used in [erg(ative)] and [poss(essive)] positions while *te* is used otherwise (i.e., in [abs(olutive)] position). For reasons that will become obvious later on I will refer to all three cases as [obl(ique)].

When looking at the paradigmatic organization, we observe that the Halkomelem determiner system starts to diverge from the German one: it appears that [obl] marking neutralizes both [gender] and [number] marking. If we were to organize the Halkomelem determiners in a paradigm, the data we have considered thus far would lead us to set up a paradigm as in table 4 (but we will see in section 3 that this paradigmatic organization does not adequately capture the behavior of Halkomelem determiners).

	[sg]		[pl]
	[masc]	[fem]	
[abs]	<i>te</i>	<i>the</i>	<i>ye</i>
[obl]	<i>tl’</i>		

Table 4. The Halkomelem determiner system (preliminary)

Finally, we turn to [location] the last feature identified as belonging to the set of d-features in German. Based on the following examples, we can conclude that Halkomelem includes [location] among its set of d-features, albeit slightly different from its German counterpart. On the one hand Halkomelem encodes a contrast in visibility: [vis(ible)] versus [invis(ible)]. In the following data from the Downriver dialect of Halkomelem k<sup>w</sup>θə encodes that the referent is not visible at the location of the utterance.

- (13) a. niʔ          nemʔ kʷətɬʷíləm      kʷθə      sqʷəméy          Downriver Halkomelem  
          be.there   go   enter                   D.INVIS   dog  
          ‘The dog went in.’  
       b. iʔ          mi      ʔəʎqəl          tə      sqʷəméy  
          be.there go      enter                   D      dog  
          ‘The dog came out.’

Suttles 2004: 342

According to Galloway 1993 and Suttles 2004, the determiner (*te*) we have discussed thus far is used if the discourse referent is present and visible at the location of the utterance but can also be used as the “unmarked determiner” without placing any requirements on the location of the discourse referent. In addition to [visibility], Halkomelem also has a special determiner for remote or hypothetical discourse referents (i.e., [remote]).

- (14) ne-s-c-ʔíʔ                                  kʷθə          páy                                  Downriver Halkomelem  
       1SG.POSS-NOM-do-value   D-REMOTE   pie  
       ‘I want some pie.’                                  Suttles 2004: 345

For ease of exposition (and consistent with the descriptive grammars of Halkomelem), I will continue to assume that the relevant feature in Halkomelem is [location] even though the values associated with it are slightly different from the ones we found in German.

When we look at the way [location] marking interacts with the other d-features of Halkomelem we observe that it is expressed across only two dimensions. Neither the plural determiner nor the ergative determiner displays a marking in [location]. In other words the contrast in [location] is neutralized in these contexts. It is for this reason that the organization of the Halkomelem determiner paradigm looks different from the German paradigm as illustrated in table 5.

	[sg]		[pl]	[obl]
	[masc]	[fem]		
[vis]	<i>te</i>	<i>the</i>	<i>ye</i>	<i>tl'</i>
[invis]	<i>kwthe</i>	<i>kwse</i>		
[remote]	<i>kw'e</i>	<i>kw'se</i>		

Table 5: The Halkomelem determiner system (Galloway 1993)

We have now established the feature content of Halkomelem determiners:

- (15) Halkomelem  
       d-features = ([gender], [number], [case], [location])

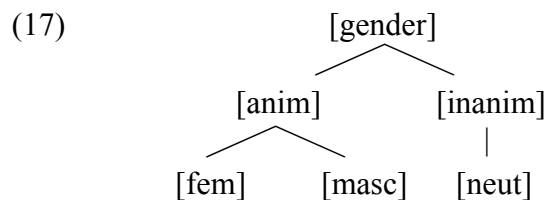
We observe that the set of d-features is identical for German and Halkomelem, but only as far as feature content is concerned. We can already tell from the way we had to illustrate the paradigms that the features are not organized in the same way thus indicating a significant syntactic difference.

## 2.3 Blackfoot

That paradigms based on d-features display different organizations across different languages is also apparent in Blackfoot (Algonquian). Again, we start with a discussion of [gender]. We observe that the form of the determiner varies with the *animacy* of the noun (Frantz 1991): [anim(ate)] versus [inanim(ate)]. While [anim] nouns are preceded by the determiner *oma*, [inanim] are preceded by a different determiner (*oomi*):

- (16) [gender]
- |    |               |              |    |                 |              |
|----|---------------|--------------|----|-----------------|--------------|
| a. | oma           | piita        | b. | oomi            | oohki        |
|    | <i>D.ANIM</i> | <i>eagle</i> |    | <i>D.INANIM</i> | <i>water</i> |
|    | ‘the eagle’   |              |    | ‘the water’     |              |

Note that [gender] in Blackfoot displays values slightly different from the two other languages we have seen so far: it distinguishes animacy. It has been independently argued, however, that animacy is a form of [gender] (see for example Harley & Ritter 2002) such that the distinction between [masc] and [fem] can be viewed as being dependent on a distinction in [animacy] as illustrated in (17)



Thus, if we consider the distinction in [animacy] as instantiating a more general case of a [gender] distinction, then we can conclude that Blackfoot includes [gender] among its d-features.

Next, when we introduce [number], we observe a different pattern than in German or Halkomelem. While Blackfoot also includes [number] in the set of its d-features, it does not neutralize the [gender] distinction. That is, the plural marker distinguishes between [anim] and [inanim] forms.

- (18) [number]
- |    |                 |                   |    |                           |                        |
|----|-----------------|-------------------|----|---------------------------|------------------------|
| a. | oma             | piita             | b. | oma-iksi                  | piita-iks              |
|    | <i>D.ANIM</i>   | <i>eagle.ANIM</i> |    | <i>D.ANIM-PL.ANIM</i>     | <i>eagle-PL.ANIM</i>   |
|    | ‘the eagle’     |                   |    | ‘those eagles’            |                        |
|    |                 |                   |    |                           |                        |
| b. | oomi            | ohki              | d. | oomi-istsi                | ohk-ists               |
|    | <i>D.INANIM</i> | <i>water</i>      |    | <i>D.INANIM-PL.INANIM</i> | <i>water-PL.inanim</i> |
|    | ‘the water’     |                   |    | ‘bunch of water’          |                        |

Turning now to [case], we observe that unlike in German or Halkomelem, [case] is not among the set of d-features in Blackfoot. That is, determiners do not vary according the syntactic position of the DP they head (see Frantz 1991).



And finally [location] is among the d-features of Blackfoot although it manifests itself slightly differently than it does in either German or Halkomelem. The determiners we have already seen (*oma/oomi*) are used if the discourse referent is in a location remote from the location of the utterance.

- (19)    nitsinowa   ooma       piita  
           *see*            *D.REMOTE*   *eagle*  
           'I saw that eagle.'

Where Blackfoot differs from both German and Halkomelem is that it further makes a distinction between whether the discourse referent is close to the speaker ([loc1]: *amo*) or close to the addressee ([loc2]: *anna*) as illustrated in (20)-(21).

- (20)    nitsikahsitsip   amo       ohki  
           *1-like*            *D.LOC1*   *water*  
           'I like this water.'  
           speaker's comments: you can say that, when the water is close enough for you to touch

- (21)    nitsikahsitsip   anni       ohki  
           *1-like*            *D. LOC2*   *water*  
           'I like that water.'  
           speaker's comments: you can say that, when the water is close to who you are talking to

We further note that Blackfoot determiners encode this difference in [location] across all different categories encoded in determiners. That is, there is no neutralization in the paradigm illustrated in table 5.<sup>7</sup>

	[sg]		[pl]	
	[anim]	[inanim]	[anim]	[inanim]
[loc 1]	<i>amo</i>	<i>amo</i>	<i>amoksi</i>	<i>amostsi</i>
[loc 2]	<i>anna</i>	<i>anni</i>	<i>anniksi</i>	<i>annistsi</i>
[loc 3]	<i>oma</i>	<i>oomi</i>	<i>oomiksi</i>	<i>omistsi</i>

Table 5: The Blackfoot determiner system (preliminary)

We have now established the content of the d-features that are active in Blackfoot:

- (22)    Blackfoot  
           d-features = ([gender], [number], [location])

We observe that the set of d-features in Blackfoot is almost but not completely identical to the set of d-features in German or Halkomelem: it does not include [case]. Thus, Blackfoot makes use of a subset of d-features available to the other languages. In addition, we observe that the

<sup>7</sup> There is one syncretic form in this paradigm: *amo* is invariant across the singular animacy distinction. Since only two cells in the paradigm share the same form, I assume that this is an accidental syncretic form rather than an instance of neutralization.

Blackfoot paradigm is organized differently from the determiner paradigms in either German or Halkomelem.

### 2.3 Conclusion: universals and variation.

The goal of this section was to establish the set of d-features active in German, Halkomelem and Blackfoot. The table in 6 summarizes what we have found:

	German	Halkomelem	Blackfoot
[gender]	✓	✓	✓
[number]	✓	✓	✓
[case]	✓	✓	✗
[location]	✓	✓	✓

Table 6: Cross-linguistic variation in the feature content of determiners

We have seen that all three languages encode at least three d-features: [gender], [number], and [location]. German and Halkomelem determiners also encode [case] but Blackfoot determiners do not. This much establishes that the feature content of d-features is not universally identical but rather that there is variation in the kinds of features determiners encode. This appears to be true even within a single language. For example, in German [location] is only encoded in the demonstratives but not in the determiners.

We have also noted that the values associated with the core features identified above differs across the three languages. In German, [gender] is valued with [masc], [fem], and [neut]; in Halkomelem we have identified a [fem] determiner. But as we will see in section 3 the feminine determiner does not contrast with a [masc] determiner; thus the [masc] feature is marked by a question mark. In Blackfoot, the values associated with [gender] are [anim] and [inanim]. For [number], all three languages are associated with [sg] and [pl] values (with a caveat for Halkomelem [sg] as indicated by the question mark. We discuss this complication in section 3). For [case], German encodes four values typical for a nominative/accusative system while Halkomelem appears to be an ergative/absolutive system (but note again the classification of *te* as encoding [abs] does not quite do justice to the facts). And finally the values associated with [location] differ in all three languages: in German we find a simple distinction between [prox] and [dist]. This is however only true for the demonstratives, but not for the determiners, which are unspecified for such a distinction (a point which will become relevant in section 3). Halkomelem determiners encode a distinction based on visibility and on remoteness. And finally, Blackfoot determiners encode a three way contrast: proximity to speaker, proximity to hearer versus remote. These findings are summarized in Table 7. 3.

	German		Halkomelem	Blackfoot
[gender]	[masc]		[masc?]	[anim]
	[fem]		[fem]	[inanim]
	[neut]			
[number]	[sg]		[sg?]	[sg]
	[pl]		[pl]	[pl]
[case]	[nom]	[dat]	[abs?]	✗
	[acc]	[gen]	[obl]	

[location]	[prox]	[vis]	[loc1]
	[dist]	[invis]	[loc2]
		[remote]	[loc3]

Table 7: Cross-linguistic variation in the feature content of determiners

In the rest of the paper I will focus on the question as to why the paradigmatic organization of the d-features differs significantly despite the fact that their feature content is nearly identical.

### 3. ... and how did it get there?

In this section I wish to establish that d-features do not form a homogenous class neither across nor within a given language. Specifically, I will demonstrate that that features can be associated with a determiner in one of two ways as summarized in (23).

- (23) Two types of d-features
- i) **Inherent feature:** F is intrinsic to the determiner and requires valuation
  - ii) **Modifying feature:** F is optional and does not require valuation

I further propose that the formal differences associated with the two sets of features are best understood as instantiating the familiar distinction between heads and modifiers. Within the adopted framework this means that inherent features merge as heads (i.e., via set-merge in the sense of Chomsky 2001) while modifying features merge as adjuncts (i.e., via pair-merge).

- (24) Two modus of MERGE
- a. inherent feature: F = head
  - b. modifying feature: F=adjunct
- ```

graph TD
    F1[F] --- F2[F]
    F1 --- D[D]
    F2 --- uF[uF]

```

```

graph TD
    D1[D] --- F[F]
    D1 --- D2[D]

```

In order to distinguish between the two types of features I use two diagnostics. The first diagnostic relies on agreement patterns: since inherent features must be valued we expect to find patterns of obligatory concord.<sup>8</sup> In contrast modifying features are only optionally added to the determiner and thus we expect to find patterns of optional concord. The second diagnostic has to do with properties of the “unmarked” determiner. Since inherent features are an integral part of the determiner we expect to find no determiner which is not marked for that feature. This does however not exclude the possibility for an “unmarked value” of a given feature. In contrast, modifying features can but need not be there and thus the absence of a modifying feature results in a determiner that is truly unspecified for that particular feature. Thus, there are two types of unmarked determiners: determiners that are associated with an unmarked value of a given feature and determiners that are simply not marked for a given feature. In what follows I will show that each of the d-features introduced in section 2 can function as either an inherent or as a modifying

<sup>8</sup> I use the term concord as a non-technical term indicating that two or more elements within a given domain share the same feature. This contrast with *agreement* which I will use later as a technical term for patterns of syntactically conditioned co-variation (see Corbett 2006 for a discussion of these terms).

feature. Thus, the formal (syntactic) properties of a given feature are not determined by their content.

### 3.1 [gender] and the significance of concord

Consider the behavior of [gender] with respect to concord within the nominal phrase. We observe that in German the [gender] specification of the determiner is uniquely determined by the [gender] of the noun, i.e., it displays obligatory concord (25)-(27).

- |      |    |                                                                                |    |                                                                                     |
|------|----|--------------------------------------------------------------------------------|----|-------------------------------------------------------------------------------------|
| (25) | a. | Der      Mann    isst.<br><i>D.MASC man    eat-3SG</i><br>'The man is eating.' | b. | *Der      Frau    isst.<br><i>D.MASC woman eat-3SG</i>                              |
| (26) | a. | *Die      Mann    isst.<br><i>D.FEM      man    eat-3SG</i>                    | b. | Die      Frau    isst.<br><i>D.FEM      woman eat-3SG</i><br>'The woman is eating.' |
| (27) | a. | *Das      Mann    isst.<br><i>D.NEUT man    eat-3SG</i>                        | b. | *Das      Frau    isst.<br><i>D.NEUT woman eat-3SG</i>                              |

In contrast, the choice of the determiner in Halkomelem is only partly restricted by properties of the noun: while the [fem] determiner is restricted to nouns denoting females, the other determiner is compatible with nouns denoting males and females, i.e., it displays optional concord (28)-(29).

- |      |    |                                                               |    |                                                                       |
|------|----|---------------------------------------------------------------|----|-----------------------------------------------------------------------|
| (28) | a. | ílhtel te swíyeqe<br><i>eat D man</i><br>'The man is eating.' | b. | ílhtel te slháli<br><i>eat D.FEM woman</i><br>'The woman is eating.'  |
| (29) | a. | *ílhtel the swíyeqe<br><i>eat D.FEM man</i>                   | b. | ílhtel the slháli<br><i>eat D.FEM woman</i><br>'The woman is eating.' |

This much suggests that features with the same content differ in terms of their syntactic properties.

In order to determine the significance of the difference in concord we need to have an understanding of the mechanics of concord. For the purpose of the present paper, I will assume a *probe-goal* approach to agreement (see for example Chomsky 2000, 2001). In particular, I assume that a probe  $\phi$  looks for an appropriate goal which is associated with a particular value for  $\phi$ , namely  $\phi\alpha$ . In other words, the probe is looking for a *matching* goal. In a second step the probe is *valued* by the goal and consequently ends up sharing the same feature value as the goal. Finally, the valued goal is deleted and an appropriate vocabulary item is inserted and *spelled out*. This last operation whereby an appropriate phonetic form is inserted is known as *late insertion* (see Halle & Marantz 1993). The three steps of agreement (also known as AGREE) are summarized in (30).

(30) The mechanics of AGREE:

|                        | Probe                                 | ...Goal                                                                            |
|------------------------|---------------------------------------|------------------------------------------------------------------------------------|
| i) <b>match:</b>       | $\varphi$                             | $\varphi\alpha$                                                                    |
| ii) <b>value :</b>     | $\varphi\alpha$                       | $\varphi\alpha$                                                                    |
| iii) <b>spell-out:</b> | <del><math>\varphi\alpha</math></del> | $\varphi\alpha$ (delete $\varphi$ ; late insertion of appropriate vocabulary item) |

What is crucial for the present purposes is that an unvalued feature  $\varphi$  is uninterpretable and uninterpretable features lead the derivation to crash at LF. As a consequence, agreement is always obligatory.<sup>9</sup>

Applying AGREE to German [gender] concord yields the following result. Recall that in German the determiner obligatorily matches the [gender] of the noun such that each noun can only be preceded by a dedicated determiner, namely the one that matches the [gender] of the noun. Given the assumptions specified above, AGREE will proceed as follows. The nouns *Mann* and *Frau* are associated with a unique [gender] ([masc] and [fem], respectively). This means that the [gender] feature  $\varphi_G$  is valued for [masc] or [fem], respectively. D is associated with an unvalued [gender] feature and is thus looking for a matching feature. In a second step the matching [gender] feature on the noun values the [gender] feature on D. This allows the [gender] feature on the determiner to delete and results in the spell-out of the determiner as *der* or *die*, respectively.

|      |      |                                                          |                                   |                                                         |                                  |
|------|------|----------------------------------------------------------|-----------------------------------|---------------------------------------------------------|----------------------------------|
| (31) | i)   | $[D \ D]$<br>$\varphi_G$                                 | $[Mann]_N$<br>$\varphi_G: [masc]$ | $[D \ D]$<br>$\varphi_G$                                | $[Frau]_N$<br>$\varphi_G: [fem]$ |
|      | ii)  | $[D \ D]$<br>$\varphi_G: [masc]$                         | $[Mann]_N$<br>$\varphi_G: [masc]$ | $[D \ D]$<br>$\varphi_G: [fem]$                         | $[Frau]_N$<br>$\varphi_G: [fem]$ |
|      | iii) | $[D \ der]$<br><del><math>\varphi_G: [masc]</math></del> | $[Mann]_N$<br>$\varphi_G: [masc]$ | $[D \ die]$<br><del><math>\varphi_G: [fem]</math></del> | $[Frau]_N$<br>$\varphi_G: [fem]$ |

This much allows for a straightforward analysis of the obligatory concord in German DP's. Next we turn to Halkomelem where we have seen that concord is possible but not obligatory. Applying AGREE to Halkomelem yields the following result. Suppose that just like in German, Halkomelem nouns are inherently associated with a value for a [gender] such that *swiyeqe* ('man') is [masc] while *slhàli* ('woman') is [fem]. Suppose further that the determiner is associated with an unvalued (and thus uninterpretable) feature which needs to find a matching goal. In a next step the determiner is valued: if valued as [masc] it is spelled out as *te* (32) and if valued as [fem] it is spelled out as *the* (33).

<sup>9</sup> Nothing hinges on this particular implementation of agreement. Any approach will do as long as it has the effect of making agreement (and thus concord) obligatory.

- (32) i) [<sub>D</sub> D            [swíyeqe]<sub>N</sub>  
                                   $\phi_G$              $\phi_G$ : [masc]
- ii) [<sub>D</sub> D            [swíyeqe]<sub>N</sub>  
                                   $\phi_G$ : [masc]  $\phi_G$ : [masc]
- iii) [<sub>D</sub> **te**            [swíyeqe]<sub>N</sub>  
                                   ~~$\phi_G$ : [masc]~~  $\phi_G$ : [masc]

- (33) i) [<sub>D</sub> D            [slháli]<sub>N</sub>  
                                   $\phi_G$              $\phi_G$ : [fem]
- ii) [<sub>D</sub> D            [slháli]<sub>N</sub>  
                                   $\phi_G$ : [fem]  $\phi_G$ : [fem]
- iii) [<sub>D</sub> **the**            [slháli]<sub>N</sub>  
                                   ~~$\phi_G$ : [fem]~~  $\phi_G$ : [fem]

The problem we are now facing however is the fact that the [fem] noun *slháli* does not need to be preceded by the [fem] determiner but can also be preceded by the other determiner *te*. But if the unvalued feature of the determiner is not valued, the derivation should crash as illustrated in (34).

- (34) i) [<sub>D</sub> D            [slháli]<sub>N</sub>  
                                   $\phi_G$              $\phi_G$ : [fem]
- ii) [<sub>D</sub> **te**            [slháli]<sub>N</sub>  
                                  ??             $\phi_G$ : [fem]

The mechanics of AGREE in combination with the assumption that [gender] features are associated with a uniform syntax leads us to expect that concord is obligatory, leaving the Halkomelem pattern unexplained.

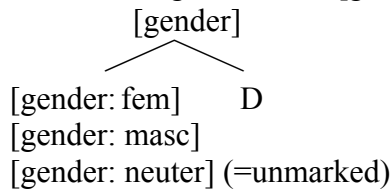
The key to understanding optional concord in Halkomelem, while maintaining the view that agreement is always obligatory, is to drop the assumption that the [gender] feature is the same as in German. The difference between the two types of [gender] features is sometimes referred to as the difference between grammatical and natural gender. In German [gender] functions as a grammatical category and is thus obligatory, whereas in Halkomelem it does not. Rather in Halkomelem the use of the [fem] determiner is strictly determined by the natural gender of the referent. But this still leaves us with the question as to how to analyze the Halkomelem pattern. What are the formal properties of a determiner which optionally encodes natural [gender]? I propose that d-[gender] in Halkomelem differs from its notional counterpart in German across two dimensions:

- i) in German d-[gender] is an inherent feature of the determiner while in Halkomelem it is a modifying feature
- ii) in German D-[gender] is determined by properties of the noun while in Halkomelem it is determined by properties of the discourse referent.

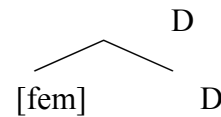
I discuss each of these differences in turn.

According to the present proposal, d-[gender] in German is an inherent feature of the determiner (with three possible values: [masc], [fem], and [neut]). As an inherent feature, [gender] merges as a head as illustrated in (35a). In contrast, in Halkomelem [fem] is a modifying feature merging as an adjunct as in (35b).

(35) a. German grammatical [gender]



b. Halkomelem natural gender



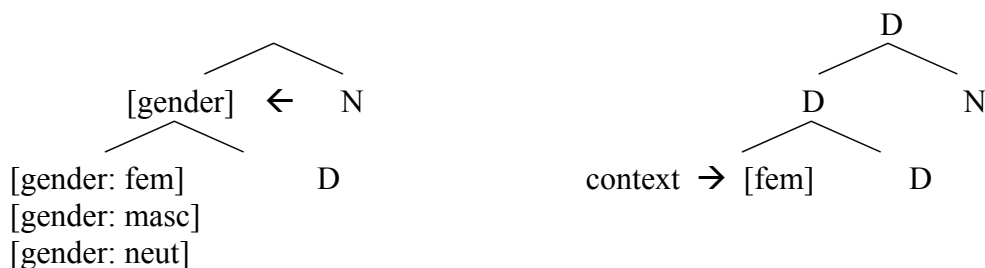
This analysis accounts for the pattern we have observed above. First, concord is obligatory in German because the inherent [gender] feature must be valued. This contrasts with Halkomelem where the feature [fem] is not an integral part of D and as such it need not be valued. And precisely because AGREE is not triggered, concord is optional.

Second, we can also understand the fact that in German there is no genderless determiner, i.e., no determiner which is truly unmarked for [gender]. Note that on some accounts grammatical [gender] may remain unmarked as well, but the unmarked form is assumed to be associated with a default value, namely [neut] (see Harley & Ritter 2002). Crucially, the default value [neut] is incompatible with [masc] or [fem] nouns and as such it is not a truly unmarked form: it is itself a form of [gender]. This contrasts with Halkomelem which has a truly unmarked determiner: *te* is a determiner which lacks the [fem] modifier. As a truly unmarked determiner, *te* is compatible with nouns denoting male or female individuals.

In sum, there are two different ways for a determiner to be “unmarked” with respect to a given feature: the determiner can be unmarked for [gender] (like Halkomelem *te*) or else it can be associated with an unmarked value of [gender] (like the [neut] German determiner *das*). I argue that this difference is structurally conditioned: since inherent (head) features are obligatory they are present even if not overtly marked. Thus, the absence of overt marking is not really unmarked: it is marked with the default value of the feature. In contrast, the absence of an adjoined modifying feature does not receive an interpretation: a determiner which is not modified is not marked with a default interpretation.

The second way in which [gender] in German differs from [gender] in Halkomelem is in the way the content of the feature is determined: in German the value of [gender] is determined via AGREE while in Halkomelem the presence of [fem] is determined by relevant properties of the discourse referent, i.e., it is determined by the context.

(36) What determines the content of the d-feature:



The difference in the way d-[gender] is determined correlates with a difference in whether or not the [fem] determiner can be used to assert that the discourse referent is [fem]. The [fem] feature of the Halkomelem determiners is interpretable, while in German it is a purely formal feature. This difference is evidenced by the following considerations. Halkomelem has a set of nouns compatible with both male and female individuals. Crucially, such nouns can be

disambiguated by the use of the [fem] determiner which restricts the denotation to that of female individuals. Take for example the noun *á:lex* which is best translated as ‘sibling’. It leaves the sex of the sibling unspecified and as such denotes male siblings (brothers) as well as female siblings (sisters). If the [fem] determiner precedes this noun, it must be interpreted as referring to a female sibling (i.e., sister). Similar facts hold for many other nouns that are unspecified for, but compatible with, biological gender (i.e., nouns denoting humans and animals).

- |      |    |                                                                                      |    |                                                                                  |
|------|----|--------------------------------------------------------------------------------------|----|----------------------------------------------------------------------------------|
| (37) | a. | te-l                      á:lex<br><i>D-1SG.POSS sibling</i><br>‘my sibling/brother’ | b. | the-l                      á:lex<br><i>D.FEM-1SG.POSS sibling</i><br>‘my sister’ |
| (38) | a. | te siyolexwe<br><i>D old.person</i><br>‘the old person/man’                          | b. | the                      siyolexwe<br><i>D.FEM old.person</i><br>‘the old woman’ |
| (39) | a. | te                      stl’itl’eqlh<br><i>D child</i><br>‘the child/boy’            | b. | the                      stl’itl’eqlh<br><i>D.FEM child</i><br>‘the girl’        |
| (40) | a. | te                      músmes<br><i>DET cow</i><br>‘the cow/male cow’               | b. | the                      músmes<br><i>D.FEM cow</i><br>‘the female cow’          |

For completeness note that the use of the unmarked determiner *te* is compatible with an unmarked interpretation but can also be used to refer to male siblings (‘brothers’). The possible preference for the male interpretation might arise as a consequence of a Gricean implicature: if the speaker chooses not to use the [fem] determiner the hearer might infer that the discourse referent is male (though this is by no means necessary).

Languages with grammatical [gender] differ in this respect. Here the [fem] determiner cannot determine the interpretation of the noun. This can be seen on the basis of the following examples. While a doctor can be either male or female its grammatical [gender] in German is [masc]. Crucially, German speakers cannot convey that the doctor is female by simply using the [fem] determiner – the result is ungrammatical (41).

- |      |    |                                                                         |    |                                                                                        |
|------|----|-------------------------------------------------------------------------|----|----------------------------------------------------------------------------------------|
| (41) | a. | der                      Doktor<br><i>D.MASC doctor</i><br>‘the doctor’ | b. | *die                      Doktor<br><i>D.FEM doctor</i><br>intended: the female doctor |
|------|----|-------------------------------------------------------------------------|----|----------------------------------------------------------------------------------------|

A change in [gender] is possible nevertheless. Speakers can either classify the noun *Doktor* with the noun *Frau* (‘woman’) as in (42a) or by suffixing the feminizer *-in* (as in (42b)). In both cases the grammatical [gender] of the noun phrase changes to [fem] and now the [fem] determiner is obligatory.

- |      |    |                                                                          |    |                                                                                             |
|------|----|--------------------------------------------------------------------------|----|---------------------------------------------------------------------------------------------|
| (42) | a. | die <b>Frau</b> Doktor<br><i>D.FEM woman.FEM doctor</i><br>‘Mrs. Doctor’ | b. | die                      Doktor <b>-in</b><br><i>D.FEM woman-FEM</i><br>‘the female doctor’ |
|------|----|--------------------------------------------------------------------------|----|---------------------------------------------------------------------------------------------|



We have now seen evidence that there are two types of [gender] d-features which display different syntactic properties: if [gender] functions as a grammatical category it displays obligatory agreement which is a result of its participation in the syntactic operation AGREE. Its [gender] value is determined by the grammatical [gender] of the noun it precedes. Grammatical [gender] features are by hypothesis non-interpretable which accounts for the fact that they cannot be used to assert the gender of the discourse referent. The second type of feature is not valued by grammatical properties of the noun but instead by the biological gender of the discourse referent. Consequently, such features do not participate in the syntactic operation AGREE and therefore do not display obligatory concord. Furthermore, d-features whose value is determined by properties of the discourse referent are interpretable and can therefore be used to assert the gender of the discourse referent.

A question that arises in this context is whether or not these two properties are dependent on each other. Is it the case that all determiners whose content is determined from outside of the nominal phrase are modificational? While the properties of [gender] do not allow us to answer this question (at least not in the languages under consideration) we will see that the behavior of other d-features suggest that these two properties are independent of each other. Specifically, I will show that inherent features can be valued from inside and from outside the nominal phrase but the presence of modifying features is never determined from inside the nominal phrase.

### 3.2 [number]

Above I have argued for a particular formalization of the difference between natural and grammatical [gender]. I claim that the formal distinction underlying this difference reflects the familiar syntactic distinction between heads and modifiers. It is thus predicted that other features should display the same contrast. In other words, the difference between “natural” versus “grammatical” categories should not be restricted to [gender].

In this section, I demonstrate that the d-feature [number] can vary across exactly the same distinction as [gender]. Specifically, I will show that in German [number] is an inherent d-feature while in Halkomelem plural marking is modificational (see Wiltschko, in press for a detailed discussion). Second, the content of [number] is determined by the properties of the (number-marked) noun while in Halkomelem plural marking is determined by properties of the DR.

As a consequence of the inherent and thus obligatory nature of [number] on determiners in German, it must be valued via AGREE and is thus obligatory. In contrast plural marking on Halkomelem determiners is fully optional. This results in a difference in the forms that are apparently unmarked for [number]. In German the unmarked value of [number] is singular which is itself a numbered form and thus not compatible with plural nouns. The result is obligatory concord and the absence of a truly unmarked form, as illustrated in (43) and (44). (For reasons of space I do not give the derivations; they are essentially the same as the ones illustrating agreement for [gender] in (31).)

- |      |                                             |                                 |
|------|---------------------------------------------|---------------------------------|
| (43) | a. der Mann<br><i>D.SG man</i><br>‘the man’ | b. *die Mann<br><i>D.PL man</i> |
| (44) | a. *der Männ-er                             | b. die Männ-er                  |

*D.SG man.PL*

*D.PL man.PL*  
'the men'

In contrast, plural marking on determiners in Halkomelem displays very different distributional properties despite the apparent identity in content. First, we observe that plural marking in the determiner is not unambiguously determined by plural marking on the noun. That is, the plural determiner *ye* can precede a plural marked noun as in (45a) but it can also precede an unmarked noun (45b).

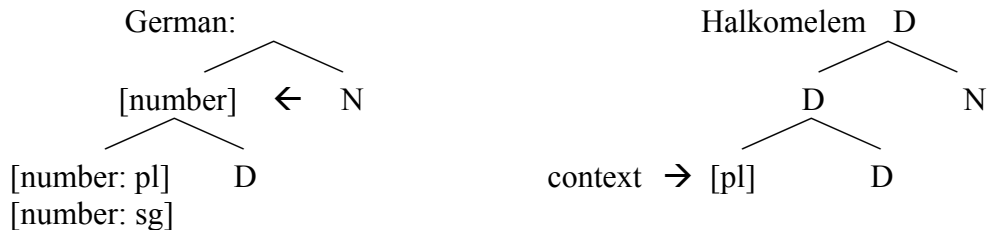
- (45) a. *ye sí:wí:qe*  
*D.PL man.PL*  
'the men'
- b. *ye swiyeqe*  
*D.PL man*  
'the men'

This much establishes that plural marking on determiners cannot be a function of the (obligatory) syntactic operation AGREE. Instead I argue that plural marking on Halkomelem determiners is modificational and as such not obligatory. Moreover, we observe that the determiner which is not marked for plural (*te*) is truly unmarked (and not associated with a singular interpretation). This is illustrated below: the unmarked determiner *te* can be used to introduce an unmarked noun and is compatible with a singular interpretation (46a) but it can also be used preceding a pluralized noun indicating that it is also compatible with a plural interpretation (46b).

- (46) a. *te swiyeqe*  
*D man*  
'the man'
- b. *te sí:wí:qe*  
*D man.PL*  
'the men'

This much establishes that plural marking in Halkomelem is determined by properties of the discourse referent rather than by properties of the noun. This suggests that Halkomelem plural marking is a modifying feature, rather than a syntactically active head-feature.

- (47) What determines the content of the d-feature:



As mentioned above, this analysis raises the question as to whether the modifying character of a feature is necessarily correlated with the way it is being assigned, i.e., by properties of the noun as in German or by properties of the discourse referent as in Halkomelem. Nothing in our analysis would require the two properties to be correlated. And there is indeed evidence to the effect that these two properties are independent of each other. The evidence comes from another Salish language, namely Lillooet (Northern Interior Salish). Here, we observe that the use of the

plural determiner is not dependent on the plurality of the noun: unmarked nouns are compatible with a plural determiner as in (47).<sup>10</sup>

(48) Lillooet

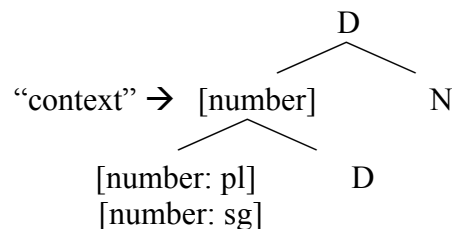
- |                                                                                            |                                                                             |
|--------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| <p>a. ti sk'úk'wmi7ta<br/> <i>D child</i><br/>           'the/a child'</p>                 | <p>ti spzúz7a<br/> <i>D bird</i><br/>           'the/a bird'</p>            |
| <p>b. i sk'úk'wmi7ta<br/> <i>D.PL child</i><br/>           'the/some children'</p>         | <p>i spzúz7a<br/> <i>D.PL bird</i><br/>           'the/some birds'</p>      |
| <p>c. i sk'wemk'úk'wmi7ta<br/> <i>D.PL child.PL</i><br/>           'the/some children'</p> | <p>i spepzúz7a<br/> <i>D.PL bird.PL</i><br/>           'the/some birds'</p> |

However, we also observe that there is no truly unmarked determiner: the unmarked determiner is necessarily associated with a singular interpretation and is therefore incompatible with a plural discourse referent:

- |                                                              |                                                |
|--------------------------------------------------------------|------------------------------------------------|
| <p>(49) a. * ti sk'wemk'úk'wmi7ta<br/> <i>D child.PL</i></p> | <p>b. * ti spepzúz7a<br/> <i>D bird.PL</i></p> |
|--------------------------------------------------------------|------------------------------------------------|

These properties suggest that plural marking on determiners in Lillooet is determined by properties of the discourse referent (like in Halkomelem) but at the same time it is an inherent, syntactically active head feature (like in German):

(50) Lillooet:



This much establishes that the two ways in which features can differ in terms of their distribution are indeed independent of each other as predicted by the analysis.

### 3.3 [case]

As discussed in section 2, [case] is among the set of d-features in both German and Halkomelem, albeit in different ways. Let us investigate the [case] features in terms of the two properties we are investigating in this paper. First, we need to determine whether [case] is determined by properties of the noun or else from outside. Given that the value of the [case] feature is a function of the linguistic environment, namely the syntactic position of the DP, we can conclude

<sup>10</sup> Thanks to Henry Davis for pointing the Lillooet pattern out to me and providing me with the relevant examples.

that [case] is determined from outside the DP in both languages. In this case however, it is not determined by properties of the discourse referent, but instead by the syntactic position of the DP. Specifically, in German [nom] is the value of the [case] feature on a DP in subject position (SpecIP) while [acc] is the value of the [case] feature on a DP in object position. Similarly, in Halkomelem the presence of an [case] feature is determined by the syntactic position: only transitive subjects, possessors and oblique arguments can be introduced by an oblique determiner (see section 2.2 for relevant data). This much establishes that [case] is a feature determined by syntactic context, i.e. from outside the DP.

Next is the question as to whether [case] is an inherent or a modifying feature. Let us apply the diagnostics we have developed thus far, i.e., whether there is a truly unmarked form compatible with all environments (in which case we are dealing with a modifying feature) or whether the unmarked form is a default value that still encodes [case]. I demonstrate below that German [case] is an inherent head feature, while Halkomelem [case] is a modifying feature.

Consider first German. Judging from the paradigm alone we can conclude that there is no truly unmarked form because [case] appears to be marked across all values for [gender], [number] and [location]. Note again, that there is an unmarked value for [case], which is however still a form of [case] and is thus restricted to the position of grammatical subjects:

- (51) Der Mannhat (den/\*der) Hund gefüttert.  
*D.NOM man has D.ACC/\*D.NOM dog fed*  
 'The man has fed the dog.'

According to our diagnostics, German [case] is an inherent d-feature: there is no determiner that is not marked for [case]. This property of the d-feature [case] in German is reflected in the paradigmatic organization of German determiners: in German all determiners are marked for [case] as discussed in section 2.

We now turn to [case] in Halkomelem. Applying our diagnostics to [case] marking on determiners in Halkomelem, we are lead to conclude that [case] is a modifying feature. Specifically, we observe that what we have labeled as an [abs] determiner (*te*) is in fact not marked for [case], but instead is truly unmarked. This has the effect that the use of *te* is always possible, even in environments when the [obl] determiner *tl'* can be used.

- (52) kw'ets-l-exw-es (tl'/te) Strang te Konrad  
*see-TRANS-3O-3S D.OBL/D Strang D Konrad*  
 'Strang saw Konrad.'

- (53) hikw te pus (tl'/te) Strang  
*big D cat D.OBL/D Strang*  
 'Strang's cat is big.'

In contrast the oblique determiner *tl'* is banned from intransitive subjects and transitive object position:

- (54) kw'ets-l-exw-es te Strang (te/\*tl') Konrad  
*see-trans-3o-3s D Strang D/\*D.OBL Konrad*  
 'Strang saw Konrad.'

- (55)    *ímex* (te/\*tl') Strang  
          *walk* D/D.OBL Strang  
          'Strang is walking.'

This much establishes that *tl'* is marked for [case] while all other determiners are truly unmarked suggesting that [case] is a modifying d-feature in Halkomelem.

We can thus conclude that the d-feature [case] differs cross-linguistically: while in German [case] is an inherent d-feature and thus functions like a head in Halkomelem [case] functions as an optional modifying feature.

- |                                                                                                                                                                                                                                                                                    |                                                                                                                                    |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| <p>(56) German</p> <p>a.        [case]</p> <p style="margin-left: 40px;">└───┬───┘</p> <p style="margin-left: 20px;">[case: nom]   D</p> <p style="margin-left: 20px;">[case: acc]</p> <p style="margin-left: 20px;">[case: dat]</p> <p style="margin-left: 20px;">[case: gen]</p> | <p>Halkomelem</p> <p>b.        D</p> <p style="margin-left: 40px;">└───┬───┘</p> <p style="margin-left: 20px;">→ [obl]       D</p> |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|

What [case] has in common across the two languages is that it is assigned from outside the DP rather than from within. This simply follows from the very nature of [case] which is determined on the basis of syntactic position rather than on the basis of inherent properties of the noun. Thus, we have another instance where an inherent feature receives its value from outside the nominal phrase supporting the claim that the two dimensions of variation discussed in this paper are partly independent of each other.

There is one more issue to discuss here. It turns out that the oblique [case] feature of Halkomelem is in fact sensitive to properties of the noun it precedes. In particular, the oblique determiner (*tl'*) is restricted to proper names and 1st and 2nd person pronouns as shown in (57).<sup>11</sup> In contrast *tl'* cannot precede common nouns or 3rd person independent pronouns.

- (57) a. *kw'ets-l-exw-es* (te/*tl'*) Strang te Konrad  
          *see-TRANS-3O-3S* D/D.OBL Strang D Konrad  
          'Strang saw Konrad.'
- b. *tsel kw'ets-l-exw* (te-elthe/*tl'*-elthe)  
          *1SG. see-TRANS-3O* D-1SG.INDEP/D.OBL-1SG.INDEP  
          'I saw him.'
- (58) a. *kw'ets-l-exw-es* (tu-t'lo/\**tl'*-tl'o)  
          *see-TRANS-3O-3S* D-3INDEP/\*DET.OBL-3INDEP  
          'He saw him.'
- b. *kw'ets-l-exw-es* (te/\**tl'*) swiyeqe  
          *see-TRANS-3O-3S* D/\*D.OBL MAN

This suggests that modifying features can be sensitive to properties of the noun, but crucially their form is not determined by these properties. I suggest that this sensitivity of the modifying case feature is reminiscent of the behavior of adjoined modifiers in general. For

<sup>11</sup> See Ghomeshi & Massam, this volume for evidence that [proper] is an active feature at least in some languages.

example, in English modifiers are sensitive to the category of the modified element: while VP-modifiers are suffixed by *-ly*, NP modifiers are not:

- (59) a. He drove slow(*ly*)  
 b. His slow(*\*ly*) driving was annoying  
 c. He has a slow(*\*ly*) car.

I conclude that it is not surprising that modifiers can be sensitive to categorial (or semantic) properties of the modifyee.

### 3.4 [location]

The final d-feature we need to consider is [location]. According to the proposal developed in this paper there are two ways in which d-features can differ formally: they can be inherent or modifying and their content can be determined by properties from within or outside of the nominal phrase. It follows from its very nature that the content of [location] has to be determined by properties of the discourse referent because it concerns the location of the discourse referent. But as we have seen above, the way the content of a feature is determined is independent of the way the feature is associated with the determiner. In this section I show that [location], just like the other features, can be either inherent or modificational.

I start with a discussion of German. We have seen in section 2 that German determiners are traditionally divided into definite determiners on the one hand and demonstratives on the other hand. This distinction is based on the observation that only demonstratives are deictic in nature: they encode information about the location of the referent with respect to the utterance location. Definite determiners express no such distinction. In other words what is classified as a definite determiner is truly unmarked for [location] as evidenced by the data in (60). Demonstratives are restricted in use by the location of the referent in ways the definite determiner is not.

- (60) a. Sieh-st du dieses Bild.  
           *see-2SG you this painting*  
           'Do you see this painting?'      the painting is close  
 b. Sieh-st du jenes Bild.  
           *see-2SG you that painting*  
           'Do you see this painting?'      the painting is further away  
 c. Sieh-st du das Bild.  
           *see-2SG you the painting*  
           'Do you see this painting?'      the location of the painting is irrelevant

Further evidence that the specification for [location] is indeed an adjoined modifier in German stems from the fact that in colloquial German where demonstratives are rarely used, [location] is specified by an adjoined locative (deictic) particle: *hier* ('here') and *dort* ('there') as illustrated in (61).

- (61) a. **Der** Mann **da** schläft.      b. **Der** Mann **dort** schläft.  
           *D man here sleep-3SG*      *D man THERE sleep-3SG*  
           'This man here is sleeping.'      'That man there is sleeping.'

Having established that [location] in German is a modifying feature we now turn to Halkomelem. From looking at the paradigmatic organization of the determiner system we might conclude that [location] in Halkomelem is not an inherent feature because it is not encoded across the entire paradigm (repeated below for convenience). For example the [pl] and the [obl] determiner do not encode such a distinction.

|          | <i>te</i>    | [fem]<br><i>the</i> | [pl]      | [obl]      |
|----------|--------------|---------------------|-----------|------------|
| [invis]  | <i>kwthe</i> | <i>kwse</i>         | <i>ye</i> | <i>tl'</i> |
| [remote] | <i>kw'e</i>  | <i>kw'se</i>        |           |            |

Table 5: The Halkomelem determiner system (Galloway 1993)

If [location] in Halkomelem is a modifying feature we predict there to be a truly unmarked for (similar to the definite determiner in German). This is indeed the case. The determiner *te* which is classified as [vis] above is in fact unmarked for [location] just as it is unmarked for [gender], [number], and [case].<sup>12</sup> Galloway 1993 states that *te* is both the unmarked determiner as well as the near & visible determiner. I propose that the specification as ‘near & visible’ is only apparent and arises as a byproduct of a Gricean implicature. That is, the hearer might infer that the speaker means to refer to a visible nearby discourse referent simply because the speaker did not use any of the other determiners which assert either that the discourse referent is invisible or that it is remote. The claim that *te* is the unmarked determiner is supported by the examples in (62). In the absence of coffee, both the [remote] determiner *kw'e* and the unmarked determiner *te* can be used.

- (62) a. *éwe te kyópi*  
           NEG D coffee  
           ‘There is no coffee.’  
       b. *éwe kw'e kyópi*  
           NEG D.REMOTE coffee  
           ‘There is no coffee.’

We can now conclude that [location] is a modifying feature in Halkomelem, just like it is in German. Halkomelem is also similar to German in that it has two different [location] modifiers: [invis] and [remote], while the two features in German are [prox] and [dist].

- (63) a. German
- $$\begin{array}{c} D \\ \swarrow \quad \searrow \\ \rightarrow [prox] \quad D \\ [dist] \end{array}$$
- b. Halkomelem
- $$\begin{array}{c} D \\ \swarrow \quad \searrow \\ \rightarrow [invis] \quad D \\ [remote] \end{array}$$

Given that [location] is a modifying feature in both German and Halkomelem, the question arises whether it is even possible for [location] to be an inherent feature. I will now show that the

<sup>12</sup> See Gillon 2006 for extensive discussion of the determiner system in Squamish, which displays a similar pattern

answer to this question is positive. In Blackfoot, [location] is an inherent feature of the determiner.

The first indication that [location] is an inherent d-feature stems from the fact that all determiners are marked for [location] in Blackfoot. That is, [location] is marked across [gender] (animacy) and [number] (see table 5 repeated below for convenience). Thus the paradigmatic organization leads us to expect that we are dealing with an inherent d-feature.

|         | [sg]        |             | [pl]           |                 |
|---------|-------------|-------------|----------------|-----------------|
|         | [anim]      | [inanim]    | [anim]         | [inanim]        |
| [loc 1] | <i>amo</i>  | <i>amo</i>  | <i>amoksi</i>  | <i>amostsi</i>  |
| [loc 2] | <i>anna</i> | <i>anni</i> | <i>anniksi</i> | <i>annistsi</i> |
| [loc 3] | <i>oma</i>  | <i>oomi</i> | <i>oomiksi</i> | <i>omistsi</i>  |

Table 5: The Blackfoot determiner system (preliminary)

The claim that [location] is an inherent d-feature in Blackfoot is further confirmed by the fact that no determiner is truly unmarked for [location]: *amo* can only be used if the discourse referent is close to the speaker; *anna/anni* can only be used if discourse referent is close to the addressee; and *ooma/oomi* is only used if the discourse referent is further away.

- (64)    nitsikahsitsip   amo    ohki  
           *I-like*                *D.LOC1*   *water*  
           'I like this water.'  
           speaker's comments: you can say that, when the water is close enough for you to touch
- (65)    nitsikahsitsip   anni    ohki  
           *I-like*                *D.LOC2*   *water*  
           'I like that water.'  
           speaker's comments: you can say that, when the water is close to who you are talking to
- (66)    nitsinowa    ooma    piita  
           *I-see*                *D.LOC3*   *eagle*  
           'I saw that eagle.'  
           speaker's comments: "you can say that, when the eagle is away from us (and the longer you say ooooooooo, the further it is away)"

We can conclude that [location] in Blackfoot is an inherent d-feature merged as a head. This supports our main proposal according to which the formal properties of d-features are independent of their content: each of the features we have investigated can be an inherent feature or a modifying feature.

### 3.5. Conclusion

In this section I have argued that the syntactic properties of features can vary across different languages. In particular, features can be inherent or modifying features. There is a cluster of properties associated with this distinction as summarized in table 6:



|                                                | inherent | modifier |
|------------------------------------------------|----------|----------|
| participates in AGREE (agreement obligatory)   | yes      | no       |
| marked across the paradigm                     | yes      | no       |
| unmarked form is associated with default value | yes      | no       |
| unmarked form is truly unmarked                | no       | yes      |

Table 6: properties of different types of features

For the three languages under discussion the study has yielded the following results:

|            | German   | Halkomelem | Blackfoot              |
|------------|----------|------------|------------------------|
| [gender]   | inherent | modifier   | inherent <sup>13</sup> |
| [number]   | inherent | modifier   | inherent <sup>14</sup> |
| [case]     | inherent | modifier   | --                     |
| [location] | modifier | modifier   | inherent               |

Table 7: Cross-linguistic variation in the syntax of d-features

I argue that the difference between inherent and modifying features is a reflex of the familiar structural distinction between heads and adjuncts. More specifically, that the difference in feature composition is a result of the syntactic operation MERGE. When a given linguistic object (LO) merges with another LO it can do so in one of two ways: it can determine the label of the newly formed LO, in which case the merged LO functions as a head. Alternatively, the label of the newly formed LO can be identical to the label of the LO before the application of MERGE, in which case the merged LO functions as an adjunct. If this approach is on the right track we can conclude that features are regular LO's which participate in syntactic operations. While it is mostly assumed within the minimalist program that features participate in the syntactic operation AGREE, the present paper argues that they also participate in the syntactic operation MERGE. The main argument for this claim stems from the fact that there are two types of features (inherent and modifying) and that this distinction straightforwardly falls into place if we assume that features are composed via MERGE.

Modifying features are by definition optional in contrast to inherent head features. It thus follows that their presence is semantically conditioned: adding a modifying feature narrows down the set of possible discourse referents that can be picked out by a given DP. For example, a DP headed by a determiner which is unmarked for [gender] can pick out any DR, while a DP headed by a determiner modified with a [fem] feature is restricted to female discourse referents. As such, the presence of a modifying feature is always determined from outside the DP: either by properties of the DR or else by the syntactic context of the DP. This contrasts with features whose presence is an inherent property of the determiner and as such obligatory, just like the presence of functional heads, for example. What is however subject to variation is the way in which the value of this inherent feature is determined. While feature valuation is always a function of the syntactic operation AGREE, we have seen that the valuing element (the goal in Chomsky's term) can but need not be in the c-command domain of the determiner (see Baker 2007 for a similar view). For example, we have seen that the value of [gender] on determiners in German is determined by the nominal complement below the determiner. In contrast the value of

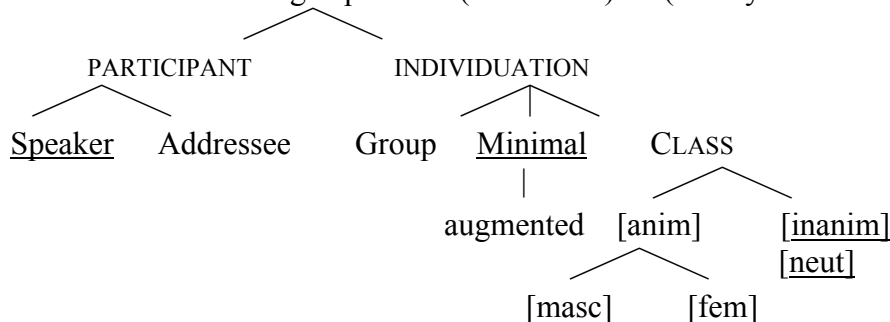
<sup>13</sup> For reasons of space I am unable to provide evidence for the head-status of Bf determiners. Suffice it to say that there is no truly unmarked form available and the animacy of the determiner appears to be determined by agreement (see Frantz 1991).

<sup>14</sup> Evidence for the head status of number in Blackfoot is discussed in section 4.

[case] on German determiners is determined by the syntactic context of the DP as a whole and thus independent of the nominal complement. We have seen in this paper that these varying properties of features are purely formal in nature and as such independent of feature content. This is expected under the assumption that features are regular LO's which can undergo the familiar syntactic operations. Given the assumption that syntax is autonomous, we do expect that features too have an autonomous syntax which is independent of their content.

I will now briefly compare the present proposal to previous approaches towards feature composition. It is one of the main results of the present study that feature bundles are not unordered sets but instead structured. As a consequence, the paradigmatic organization of d-features differs cross-linguistically despite the fact that their feature content is nearly identical. This in itself is however not a new conclusion: several researchers have previously proposed a hierarchical organization of features (see Blevins 1995, Harley & Ritter 2002, Cowper & Hall, this volume among many others). Such feature hierarchies are generally used to explain systematic gaps in the paradigms (patterns of syncretism) or cross-linguistic variation within paradigms. An example of such a feature hierarchy is the feature geometry developed in Harley & Ritter 2002 for pronouns given in (67).

(67) Referring expression (= Pronoun) (Harley & Ritter 2002: 486 (6))



The geometry in (67) captures the insight that features do not just come in bundles but are hierarchically organized: it defines natural classes of features and it identifies the conceptual bases for different sets of features (i.e., the features represented in SMALL CAPS). Furthermore, in the hierarchy in (67) underlining represents the default interpretation of an unmarked organizing node and as such captures the difference between *marked* and *unmarked* features. That is, if INDIVIDUATION is unmarked, the default interpretation is Speaker; if INDIVIDUATION is unmarked, the default interpretation is Minimal; and finally if CLASS is unmarked, the default interpretation is inanimate/neuter. Note that in this system, the distinction in markedness is not a result of the hierarchy itself, it is instead encoded with an additional diacritic, which is independent of the hierarchical organization. The main problem with the feature geometry in (67) is its failure to recognize the distinction between an *unmarked feature value* and the *absence of marking*. Take for example [number]. According to the feature geometry in (67), the value [sg] arises in the absence of the feature [augmented]. If this were the case universally, we would expect that the Halkomelem determiner that is not specifically marked as plural is necessarily interpreted as singular, contrary to fact. While we might need a feature geometry to understand the nature of unmarked values (something that the current proposal does not provide) we need to also make sure that the system allows for a recognition of the two types of being unmarked. This is what the present syntactically grounded system allows us to do. I submit that the effects of feature

geometries are ultimately derivable from independently established properties of the computational system.

#### 4. ... and how is it *spelled out*?

So far we have investigated the determiner system of three different languages in terms of two questions: i) what 's in a determiner in terms of feature content and ii) whether it functions as an inherent or a modifying feature, which affects its distribution. We have seen that languages display variation in terms of both these dimensions. We now turn to another dimension in which features may differ across languages, namely in terms of their *spell-out properties*. By spell-out properties, I mean the phonetic content associated with a given d-feature. Specifically, I am interested in the spell-out of d-features as it relates to the spell-out of the equivalent feature which serves as the valuing feature. Roughly, we observe that languages differ as to whether or not the phonetic content of the valued feature is identical to the phonetic content of the valuing feature. To illustrate, consider the spell-out properties of plural marking in German (68)-(70) and Blackfoot (71)-(72)

German plural marking

- |      |    |                  |              |    |     |                      |
|------|----|------------------|--------------|----|-----|----------------------|
| (68) | a. | der              | Mann         | b. | die | Männ-er              |
|      |    | <i>D.MASC.SG</i> | <i>man</i>   |    |     | <i>DET.PL man-PL</i> |
|      |    | 'the man'        |              |    |     | 'the men'            |
|      |    |                  |              |    |     |                      |
| (69) | a. | die              | Frau         | b. | die | Frau-en              |
|      |    | <i>D.FEM.SG</i>  | <i>woman</i> |    |     | <i>D.PL woman-PL</i> |
|      |    | 'the woman '     |              |    |     | 'the women '         |
|      |    |                  |              |    |     |                      |
| (70) | a. | das              | Kind         | b. | die | Kind-er              |
|      |    | <i>D.NEUT</i>    | <i>child</i> |    |     | <i>D.PL child</i>    |
|      |    | 'the child . '   |              |    |     | 'the children . '    |

Blackfoot plural marking

- |      |    |             |                |    |             |                 |
|------|----|-------------|----------------|----|-------------|-----------------|
| (71) | a. | oma         | ponoká-wa      | b. | om-iksi     | ponoká-iksi     |
|      |    | <i>D.SG</i> | <i>elk-SG</i>  |    | <i>D-PL</i> | <i>elk-PL</i>   |
|      |    | 'the elk'   |                |    |             | 'these elks'    |
|      |    |             |                |    |             |                 |
| (72) | a. | omi         | í'ksisako-yi   | b. | om-istsi    | í'ksisako-istsi |
|      |    | <i>D-SG</i> | <i>meat-SG</i> |    | <i>D-PL</i> | <i>meat-PL</i>  |
|      |    | 'the meat'  |                |    |             | 'these meats'   |

Frantz 1991, p. 8

We observe that in German, the spell-out of [pl] on determiners is **distinct** from the spell-out of [pl] on nouns. This contrasts with Blackfoot, where the spell-out of [pl] is **identical** on nouns and determiners. In the typological literature the latter spell-out type is classified as *alliterative agreement* (Corbett 2006). In light of this empirical observation, the question arises as to whether this is a significant difference, and if so, what it tells us about the spell-out properties of d-features. Note that the syntax of [pl]-marking is identical in Blackfoot and German: in both

languages [number] functions as an inherent head feature. We have seen evidence for this in German in section 3.2. Blackfoot [pl] marking displays precisely the same properties: there are no determiners that are truly unmarked for [number] and as such [pl] marking is obligatory in the context of a [pl] noun.

## Blackfoot plural marking

- (73)    a. \*oma     ponoká-**iks**i                      b. \*oma     í'ksisako-**ists**i  
              D       elk-PL                                  D       meat-PL  
              ‘these elks’                                      ‘these meats’

This leads us to our first conclusion regarding the spell-out properties of d-features: they are independent of feature content and independent of feature syntax. The purpose of this section is to develop a principled analysis that accounts for the spell-out properties of d-features. I will first outline the basic assumptions concerning the nature of spell-out as proposed in the framework of distributed morphology (section 4.1); then I show how the Blackfoot pattern cannot be straightforwardly accounted for within these set of assumptions (section 4.2); and finally I develop a proposal that provides a principled explanation for different spell-out patterns of d-features.

## 4.1 The mechanics of spell-out

For the purpose of this paper I will adopt the main assumptions regarding spell-out as developed in the framework of distributed morphology (Halle & Marantz, 1993). According to this approach, the computational system (syntax) manipulates abstract heads without phonetic content. The computational system derives complex heads which must then be matched by appropriate vocabulary items (i.e., items with phonological content).<sup>15</sup> Specifically, only the most specific vocabulary item can be inserted and this is what is known as the operation SPELL-OUT. This amounts to saying that the insertion of syntactically derived vocabulary items is post-syntactic. This leads to a strict division of  $\sqrt{\text{roots}}$  which are inserted early and functional categories which by means of their syntactic nature are inserted late.

Let us briefly work through a derivation of German determiners given this view of spell-out. In section 3 we have seen that the value of [number] is determined by properties of the noun, namely by means of the syntactic operation AGREE. The derivation is repeated below for convenience.

- |      |      |                                          |                                                                    |
|------|------|------------------------------------------|--------------------------------------------------------------------|
| (74) | i)   | $[\sqrt{\text{mann}}]_N$<br>[number: pl] |                                                                    |
|      | ii)  | $[_D D$<br>[number: u]                   | $[\sqrt{\text{mann}}]_N$<br>[number: pl] $\rightarrow$ F- matching |
|      | iii) | $[_D D$<br>[number: pl]                  | $[\sqrt{\text{mann}}]_N$<br>[number: pl] $\rightarrow$ F-valuation |

<sup>15</sup> Within distributed morphology the derived syntactic heads can be interpreted by a component identified as “morphology”. However, for the purpose of this paper we can abstract away from this component as it plays no role.

In (74), the nominal root  $\sqrt{\text{mann}}$  ('man') is inserted early. In the course of the derivation, the functional feature [number] is added (on some accounts by virtue of a functional category; see Ritter 1991). When the abstract functional head D is added, it comes with an unvalued feature [number: u], which subsequently gets valued via AGREE. Once the abstract D head is valued for all its features a vocabulary item is chosen that most closely matches the feature specification of the derived and valued D-head. For the case at hand the following determiners are among the ones lexical insertion can select for.

(75) Vocabulary items:

|                        |                       |                 |
|------------------------|-----------------------|-----------------|
| D:                     | ([sg], [masc], [nom]) | → <i>der</i>    |
|                        | ([sg], [fem], [nom])  | → <i>die</i>    |
|                        | ([sg], [neut], [nom]) | → <i>das</i>    |
|                        | ([pl], [nom])         | → <i>das</i>    |
| $\sqrt{\text{mann}}$ : | ([sg])                | → <i>Mann</i>   |
|                        | ([pl])                | → <i>Männer</i> |

The operation SPELL-OUT then inserts these vocabulary items and as such the phonological content missing from the abstract syntactic heads is added as shown in (76).

|      |                    |                       |             |
|------|--------------------|-----------------------|-------------|
| (76) | [ <sub>D</sub> die | [Männer] <sub>N</sub> | → spell-out |
|      | [number: pl]       | [number: pl]          |             |

For the purpose of the present discussion it is crucial that under this approach the phonological content of the [pl] feature on the determiner is independent of the phonological content of [pl] marking on the noun. Thus, we do not expect [pl] marking on nouns and [pl] marking on determiners to be related. This is in fact what we find as we have seen in (68)-(70). This approach also correctly predicts the existence of suppletive forms. That is, since the spell-out of [pl] on nouns is independent of the spell-out of [pl] on determiners it is irrelevant what form the [pl] marker on the noun takes. What is crucial is the presence of the morpho-syntactic feature.

## 4.2 The problem with Blackfoot

As shown above, in Blackfoot [pl] marking on the noun is spelled out identically to [pl] marking on the determiner.<sup>16</sup> Assuming the same derivation for [pl] marking in German and Blackfoot we come to the conclusion that the identity in form of Blackfoot [pl] marking is coincidental. Consider the derivation of the plural phrase *omiksi ponokáíks* ('those elks') in (77). In a first step, the nominal root *ponoká* is inserted early; the plural feature is subsequently added in the form of a functional head. Next the abstract D-head is merged (without phonological content because it is a functional morpheme) and it contains an unvalued [pl] feature. This feature is valued by the corresponding [pl] feature on the noun. Finally, an appropriate vocabulary item is chosen, namely one that most closely matches the feature specification of the derived abstract D-head.

<sup>16</sup> This is not completely true. In fact plural marking on the noun is pronounced (*iks/ists*) while the equivalent marker on the determiner is marked with (*iksi/istsi*). I assume that this is due to a late phonological rule.

These forms include the ones shown in (78). And finally the operation SPELL-OUT produces the plural phrase.

- (77)
- |      |                  |                       |               |
|------|------------------|-----------------------|---------------|
| i)   |                  | [ponoká] <sub>N</sub> |               |
|      |                  | [number: pl]          |               |
| ii)  | [ <sub>D</sub> D | [ponoká] <sub>N</sub> | → F- matching |
|      | [number: pl]     | [number: pl]          |               |
| iii) | [ <sub>D</sub> D | [ponoká] <sub>N</sub> | → F-valuation |
|      | [number: pl]     | [number: pl]          |               |

- (78) Vocabulary items:
- |    |                  |                  |
|----|------------------|------------------|
| D: | ([sg], [anim])   | → <i>ooma</i>    |
|    | ([sg], [inanim]) | → <i>oomi</i>    |
|    | ([pl], [anim])   | → <i>oomiksi</i> |
|    | ([pl], [inanim]) | → <i>omistsi</i> |

- (79)
- |                              |                           |             |
|------------------------------|---------------------------|-------------|
| [ <sub>D</sub> <i>omiksi</i> | [ponokáiksi] <sub>N</sub> | → spell-out |
| [number: pl]                 | [number: pl]              |             |

The problem with this derivation is obvious. Since the expression of [number: pl] on D is independent of the expression of [number: pl] on N, the sameness in phonological form is purely coincidental.

### 4.3 The proposal: Early insertion of f-morphemes

The identity in phonological content between [pl] marking on nouns and determiners leads to an obvious conclusion. It appears that [pl] marking is associated with one and the same phonetic content across the two categories (nouns and determiners). If so, we can conclude that [pl] marking in Blackfoot is inserted early; specifically it is inserted before AGREE values the [number] feature on the determiner. This still allows us to understand feature valuation in terms of AGREE, but because the plural exponent is inserted early, AGREE has the effect of copying the form to the higher position. The derivation I propose for Blackfoot [pl] marking is illustrated in (80). As before, the nominal root [ $\sqrt{\text{ponoká}}$ ]<sub>n</sub> is inserted early, but now the functional category NUMBER is merged with its phonological content (i.e., via early insertion). When the determiner is merged with an unvalued feature [number: u] it is matched with the corresponding [number] feature on the noun. This time the effects of AGREE are that of copying because the phonological content is already present at the point of AGREE. As a consequence [pl] marking on the noun and the determiner are identical in form.

- (80)
- |    |  |                                                                   |
|----|--|-------------------------------------------------------------------|
| i) |  | [ $\sqrt{\text{ponoká}}$ ] <sub>n</sub> NUMBER] <sub>NUMBER</sub> |
|----|--|-------------------------------------------------------------------|

[number: pl]

- |      |                                         |                                                                         |                                                              |
|------|-----------------------------------------|-------------------------------------------------------------------------|--------------------------------------------------------------|
| ii)  |                                         | $[\sqrt{\text{ponoká}}]_n \text{iksi}]_{\text{NUMBER}}$<br>[number: pl] | → VI insertion (=early)                                      |
| iii) | $[_D \text{ D}]$<br>[number: u]         | $[\sqrt{\text{ponoká}}]_n \text{iksi}]_{\text{NUMBER}}$<br>[number: pl] | → F-matching                                                 |
| iv)  | $[_D \text{ D-iksi}]$<br>[number: pl]   | $[\sqrt{\text{ponoká}}]_n \text{iksi}]_{\text{NUMBER}}$<br>[number: pl] | → F-valuation = F-COPY<br>= pied piping of phonetic material |
| iv)  | $[_D \text{ oma-iksi}]$<br>[number: pl] | $[\sqrt{\text{ponoká}}]_n \text{iksi}]_{\text{NUMBER}}$<br>[number: pl] | → VI insertion (late)                                        |

Assuming that [pl] is inserted early in Blackfoot immediately predicts the absence of suppletive forms or allomorphy in Blackfoot [pl] marking. And to the best of my knowledge this is indeed the case: Blackfoot [pl] marking is completely regular on both nouns and determiners. Thus, our argument for early insertion of functional morpheme which was mainly based on economy considerations receives empirical support.

#### 4.4. Summary

I have argued in this section that in Blackfoot, [pl] marking undergoes early insertion despite its status as a functional morpheme. This differs from standard assumptions within the framework of distributed morphology according to which f-morphemes are always inserted late. There are two correlates for early insertion of f-morphemes: no suppletive forms (or allomorphs) and (near) identity in phonetic content.

This proposal makes a number of predictions, which I have to leave for future research. In particular, we predict that plural marking on two distinct categories can only be identical in form if they are inserted early and if the feature is a head feature (otherwise co-occurrence is not a function of [number] AGREE). What remains to be determined, is the triggering factor for early versus late insertion: is it something that needs to be learned as part of the lexical entry of a given functional morpheme? Or are there language-specific or morpheme-specific factors that will determine the insertion site? I will have to leave this question for future research.

#### 5. Conclusion and remaining questions

The main goal of this chapter was to explore the feature composition of determiners across three unrelated languages. In particular, I was concerned with three questions:

- i) What is the feature *content* that is expressed in given determiner?
- ii) What are the *formal syntactic properties* of any given determiner feature?
- iii) What are the *spell-out properties* of any given determiner feature?

With respect to the first question, we have found that the feature content encoded in the three systems is virtually identical with the exception of [case] which is missing in Blackfoot (see table 6, repeated below for convenience).

|            | German | Halkomelem | Blackfoot |
|------------|--------|------------|-----------|
| [gender]   | ✓      | ✓          | ✓         |
| [number]   | ✓      | ✓          | ✓         |
| [case]     | ✓      | ✓          | ✗         |
| [location] | ✓      | ✓          | ✓         |

Table 6: Cross-linguistic variation in the feature content of determiners

In exploring the formal syntactic properties of d-features we have seen that despite identity in content, the d-features behave differently. Specifically, I have shown that there are two ways in which features differ syntactically: the modus of merge (as a head or as a modifier) and the locus of feature valuation (from within or from outside the DP). The findings are summarized in Table 7 below.

|            | German                                         | Halkomelem                                     | Blackfoot                                  |
|------------|------------------------------------------------|------------------------------------------------|--------------------------------------------|
| [gender]   | Head<br>dependent on N                         | modifier<br>dependent on discourse<br>referent | head<br>dependent on N                     |
| [number]   | Head<br>dependent on N(um)                     | Modifier<br>dependent on discourse<br>referent | head<br>dependent on N                     |
| [case]     | Head<br>dependent on syntactic<br>position     | modifier<br>dependent on syntactic<br>position | --                                         |
| [location] | modifier<br>dependent on discourse<br>referent | head<br>dependent on discourse<br>referent     | head<br>dependent on discourse<br>referent |

Table 7: Cross-linguistic variation in the syntax of d-features

Assuming that d-features are composed in two different ways allowed us to understand a number of puzzling properties associated with the paradigmatic organization of d-features. In particular under this approach it is clear why determiner paradigms seem to be organized so differently even if they involve features of similar or identical content. Paradigmatic organization will in part reflect the head/modifier distinction. Furthermore, I have established the existence of two kinds of unmarked forms: a determiner can be marked or unmarked for a given feature and a marked feature can in turn be associated with an unmarked value. A determiner marked with a modifying feature does not enter into a paradigmatic contrast: the unmarked form is truly unmarked for the relevant feature. In contrast, a determiner marked with an inherent head feature enters into opposition with other values for the same feature. But even head features can be associated with a default value which is used in the absence of explicit marking (for example the unmarked [gender] value in German is [neut]). Previous approaches that seek to capture the fact that features are not simply unordered bundles cannot distinguish between these two types of markedness. I have argued that this distinction is best analyzed as a reflex of a structural



distinction familiar from syntactic composition, namely the one between heads and adjuncts. This leads me to conclude that feature composition is essentially syntactic. This suggests that features are not special linguistic objects, but instead that they are subject to the same syntactic operations as any other linguistic object. As such the present study supports the view that there is a single engine for composition which applies above and below the word level. This is hardly surprising, given recent claims about the role of features in human languages. That is, within the minimalist program it is assumed that syntactic operations are essentially feature driven: features are standardly assumed to undergo and thus trigger movement and/or agreement.

An important byproduct of the proposed analysis is a new approach towards the distinction between determiners and demonstratives. In particular, it allows us to understand why some languages appear to only have demonstratives, while others have determiners and demonstratives. In particular, if [location] functions as an inherent head feature all determiners will be so marked and we get a language with only demonstratives (like for example Blackfoot). In contrast in a language where [location] functions as a modifying feature we expect a difference between determiners that are truly unmarked for [location] (i.e., determiners) and determiners that are marked for [location] (i.e., demonstratives).

Finally I have also shown that the spell-out properties of features can differ: a given feature can be inserted early in which case feature valuation results in copying the feature including the phonological content. In contrast, a feature can be inserted late in which case the marking will differ in form on the two elements that are so marked (for example [pl] marking on nouns and determiners).

While this paper has only analyzed three languages, it makes clear prediction regarding the range of variation we expected to find. It remains to be seen whether or not these predictions are borne out. But to do so we will have to investigate many more languages, which goes beyond the scope of this paper.

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