Diminutive-formation in German: Spelling out the classifier analysis*

Dennis Ott, Harvard

dott@fas.harvard.edu

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1 Introduction

In the analysis of noun-phrase structure developed by Borer (2005: chap. 4), it is assumed that the basic interpretation of nominalized roots is mass, while additional functional structure above the root gives rise to count readings. The head which is responsible for the semantic division of masses Borer calls Dɪv. In addition, a head labeled # projects a "Quantity Phrase", providing a specifier position for elements that quantify over or enumerate the units created by Dɪv (e.g., numerals). The basic structure is shown below in a simplified form (cf. Borer 2005: 96):

(1)
```
        DP
       /  \
      D    #P
          /  \
         #   DɪvP
            /  \
          Dɪv   NP
```
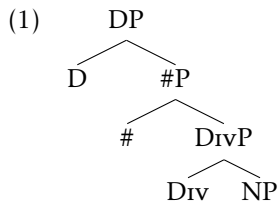
The functional heads can be realized in language-specific ways. Classifier languages of the Chinese type realize Dɪv as a classifier, which 'atomizes' the basic mass meaning of the noun (see Doetjes 1996, Chierchia 1998, Muromatsu 1998, Cheng and Sybesma 1999, Simpson 2005, among others, for similar views, going back to Greenberg (1972) and Lyons (1977)). In languages like English, which lack classifiers of this type, Borer claims that Dɪv realizes number marking (plural). Hence, in these languages, it is number that derives count interpretations (cf. also Bouchard 2002). This aspect of Borer's approach is based on a typological generalization according to which languages which have morphological number marking tend not to have a classifier system, and vice versa (see also Aikhenvald 2000). Hence, for Borer, number morphology and classifiers are in strictly complementary distribution (2005: 93).

While the typological generalization appears to be true across a wide range of languages, Borer (2005: 92, fn. 6) briefly discusses a potential counterexample (attributing the observation to Henk van Riemsdijk[1]). In Dutch, the diminutive formation consistently turns mass nouns into count, while being compatible with overt morphological plural marking:

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[1] A similar observation (for German) is made by Dressler and Barbaresi (1994: 125f.), who in turn refer to Kölver 1983.

(2)	a.	veel	zout		(3)	a.	veel	brood
		much	salt				much	bread
	b.	* veel	zoutje			b.	* veel	broodje
		much	salt.DIM				much	bread.DIM
	c.	veel	zouten			c.	veel	broden
		many	salts				many	breads
		'many kinds of salt'					'many kinds of bread'	
	d.	veel	zoutjes			d.	veel	broodjes
		many	salt.DIM.PL				many	bread.DIM.PL
		'many salt crackers'					'many rolls'	

Dutch diminutive morphemes thus appear to be classifier-like (in their 'atomizing' function, to be made precise in §2 below) while flatly contradicting the empirical generalization that classifier languages do not show morphological plural marking. Once the strict complementarity of (certain types of) classifiers and number morphology is given up,[2] an analysis of German diminutive *-chen* as a classifier seems feasible. In this paper, I will develop this approach in some detail and show that a structurally parallel analysis of diminutive morphemes and numeral-classifier words makes a number of desirable predictions.[3]

The paper is organized as follows. In §2, I provide the empirical groundwork for my analysis. The starting point (§2.1) will be de Belder's (2008) observation that Dutch and German employ different syntactic strategies to express different types of count readings. I will interpret the data as signaling a structural parallelism between diminution and numeral classification in German/Dutch. This idea is also the basis for the theory of diminutive formation developed by Wiltschko (2005), whose arguments are summarized in §2.2. The bulk of the paper is §3, where I develop an alternative account that builds on the same intuition as Wiltschko's. I will, however, adopt a specific view of morphology (articulated in Julien 2002), which denies the grammatical reality of "words" and, consequently, rejects any substantial distinction between morpheme configurations with "word" properties and phrasal objects (§3.1). Consequently, I will show in §3 how both numeral-classifier constructions and synthetic forms (diminutivized nouns and compounds) are derived from the same underlying structure.[4] The main proposal will be outlined in §3.2, where it is argued that diminutive formation involves phrasal movement; in §3.2.2 it is shown that this movement is motivated by the phonological deficiency of the diminutive morpheme. §3.3 elaborates in some more detail on the nature of the German diminutive morpheme, as seen from this perspective. §4 concludes.

2 Diminution and classification

This section will adduce some further empirical evidence for the classifier-like function of the German diminutive suffix, as mentioned in connection with van Riemsdijk's observation. The upshot of the discussion will be that diminutive formation and phrasal numeral-classifier constructions in German are two alternative strategies for the realization of unit-count interpretations.

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[2] It is known independently that the complementarity is not perfect; see Aikhenvald (2000), Svenonius (2008).

[3] I will only be concerned with the Standard German diminutive *-chen* and its dialectal variants, using *-chen* as a cover term. This will also include *-lein*, which I take to be an allomorph chosen to avoid adjacent palatal fricatives (e.g. *Wöchchen* 'week.DIM', *Wöchlein* 'week.DIM'; *Büchchen* 'book.DIM', *Büchlein*). I have nothing to say about other, non-native diminutive-like suffixes (see Wiese 1996b: 122, fn. 7 and Donalies (2006) for some remarks). Dutch will not be discussed separately. As far as I was able to determine, however, the Dutch diminutive behaves exactly like its German counterpart in all crucial respects, so that the analysis developed here can presumably be applied to Dutch without any significant modifications.

[4] Notice that Julien (2002) limits her attention to cases of inflectional morphology; since the present paper argues for a similar treatment of *derivational* morphology/compounding, it can be seen as an extension of Julien 2002's general approach.

2.1   Individuation in Dutch and German

De Belder (2008) argues that the mass/count distinction as represented structurally in Borer's system is too coarse: count readings are further divided into *kind* readings and *unit* readings (henceforth, kind-count and unit-count, respectively). In English, an expression like (4), with a plural mass noun, is ambiguous between the two count readings given in (4a) and (4b) (cf. Corbett 2000: 85):

(4)   I tasted two chocolates

    a.   I tasted two kinds of chocolate (*kind-count*)

    b.   I tasted two pieces of chocolate (*unit-count*)

This kind of ambiguity in count readings is absent in Dutch and German. In Dutch, the equivalent of (4) is unambiguously generic (5a); in order to express the unit reading as in (4b), Dutch speakers have to resort to the diminutive form (5b):

(5)   a.   Ik bestudeerde twee chocolades
        I   studied   two   chocolates

      'I studied two kinds of chocolate' (*kind-count only*)

    b.   Ik at   twee chocolatjes
        I   ate two   chocolate.DIM.PL

      'I ate two pieces of chocolate' (*unit-count only*)

The same facts hold for German, where the diminutive likewise gives rise to a unit-count reading:

(6)   a.   Ich mag zwei Biere besonders
        I   like two   beers especially

      'There are two kinds of beer that I like in particular' (*kind-count only*)

    b.   Ich habe gestern   zwei Bierchen   getrunken
        I   have yesterday two beer.DIM(.PL) drunk

      'I drank two beers yesterday' (*unit-count only*)

We thus notice that in German and Dutch "absence of the diminutive forces kind readings, the presence of the diminutive results in unit readings" in connection with quantified mass terms (de Belder 2008: 118).[5]

Focusing on German now, there is another way of creating a unit reading, namely by adding what I will call (following Wiltschko 2005) a *numeral classifier*, such as *Stück* 'piece' or *Glas* 'glass':[6,7]

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[5]Diminution appears to have an individuating function for mass nouns also in Italian, Polish, Romanian, Maghreb Arabic, and Latvian; see Dressler and Barbaresi (1994: 125, 594 fn. 173) and references cited there. Jurafsky (1996: 555) gives examples of individuated mass diminutives from Yiddish, Dutch, Ojibwa, Ewe, Baule (Niger-Congo), Cantonese, Zulu, Shona (Bantu), Berber, and Nahuatl (see also Talmy 1978, Heine et al. 1991). For the purposes of the present paper, I will restrict my attention to German (and, implicitly, Dutch).

[6]The use of numeral classifiers appears to be somewhat more restricted in Dutch; this raises interesting questions about microvariation, which I will set aside here. The remainder of the paper will focus on German.

[7]Throughout this paper, I use the term "numeral classifier" in a somewhat loose sense, designating nominal elements which can license numerals and other quantifiers in a context where these are otherwise unacceptable. Numeral-classifier constructions surface as "serial-noun constructions" (Zhang 2009: 18), in which the numeral classifier acts as an "auxiliary noun" (Chao 1968: 584; cf. also Blühdorn 2006: 55 on German). Löbel (2001) uses the term "quantity nouns" and Alexiadou et al. (2007) refer to the analytic numeral-classifier construction as "juxtaposed pseudopartitives", both however highlighting the strong similarties to classifier constructions (see also Chierchia 1998: 73).

In lieu of a clear definition of this category, I merely note that the meaning of "numeral classifier" as employed here is is fully compatible with its use in Svenonius 2008, on which I will rely below. Notice that the rather large number of lexical items which can function as numeral classifiers in German is not problematic for the claim that they are indeed members of this class; in fact, Aikhenvald (2000: 98) explicitly states that "numeral classifiers can be an open lexical class".

(7) Holz 'wood'

    a. zwei Hölzer
       two wood.PL

       'two kinds of wood' (*kind-count only*)

    b. i. zwei Hölzchen
          two wood.DIM

          'two (small) pieces of wood' (*unit-count only*)

      ii. zwei Stück Holz
         two piece wood

         'two pieces of wood' (*unit-count only*)

(8) Bier 'beer'

    a. zwei Biere
       two beer.PL

       'two kinds of beer' (*kind-count only*)

    b. i. zwei Bierchen
          two beer.DIM

          'two (small) glasses of beer' (*unit-count only*)

      ii. zwei Glas Bier
         two glass beer

         'two glasses of beer' (*unit-count only*)

Both kinds of construction in (7b) and (8b) unambiguously give rise to a unit-count interpretation (cf. Blühdorn 2006).[8] See Alexiadou et al. (2007: 403) for some discussion and similar examples from Greek.

These facts suggest that we need more than a syntactic mechanism to derive mass and count readings as such, if we also want to account for the difference between kind-count readings (as in (7a)) and unit readings (as in (7b)). Borer's system, sketched in all brevity in (1) and repeated here, does not seem sufficient in this regard:

(1)
         DP
        / \
      D   #P
          / \
        #   DɪvP
            / \
         Dɪv NP
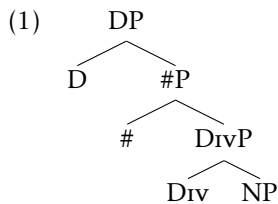
In this system, only the Dɪv-head allows for the derivation of count interpretations from the basic mass denotation; it does not allow for a structural distinction between the two readings given in (7a) and (7b). As argued by de Belder,

> Borer's Dɪv^0-head does not suffice to account for [the kind of Dutch/German data in (5) and (7–8)]. Moreover, Borer's structure does not provide a head that can host the diminutive morpheme. (de Belder 2008: 118)

I will argue below that the decomposition of noun-phrase structure developed in Svenonius 2008 provides a more promising starting point for a structural account of the different "count strategies"

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[8]In some cases, it is possible to express a unit-count reading without a numeral classifier, as in *zwei Bier* 'two glasses of beer'. I follow Blühdorn (2006: 71) and analyze this case as structurally identical to (8b-ii), the numeral classifier having been elided (*zwei ~~Glas~~ Bier*). Clear evidence for this is that the head noun is singular, which is unexpected unless the expression is elliptical.

available in German, and in particular for the peculiar properties of the German diminutive.[9] Before we turn to this novel analysis in §3, however, let us review the arguments for the classifier analysis of German diminutive suffixes put forth in Wiltschko 2005.

2.2   Wiltschko's (2005) classifier analysis

Wiltschko (2005) defends the classifier analysis of German diminutive suffixes, despite the problems it raises for the generalization that classifiers and number marking are in strictly complementary distribution (a fundamental tenet of Borer's approach, as pointed out in the preceding section).

More specifically, Wiltschko proposes to analyze diminutive suffixes as numeral classifiers, i.e. structurally equivalent to *Stück* 'piece', *Blatt* 'sheet', *Kopf* 'head', *Mann* 'man', etc.:[10]

(9) a. zwölf Stück Vieh
        twelve piece cattle

     b. drei Blatt Papier
        three sheet paper

     c. vier Kopf Salat
        four head lettuce

     d. zwölf Mann Besatzung
        twelve man   crew

As shown in the preceding section, both diminutives and numeral-classifier constructions as in (9) give rise to a unit-count interpretation. A noun like *Salat* 'lettuce' does not allow enumeration/quantification (10a), unless it is either combined with a numeral classifier (10b) or diminutivized (10c):

(10) a. * vier Salat
           four lettuce

      b.   vier Kopf Salat
           four head lettuce

      c.   vier Salätchen
           four lettuce.DIM

Wiltschko analyzes numeral classifiers as 'light nouns' that take N-complements (where N is taken to be a categorized root). The structure Wiltschko proposes for (10b) is shown in (11):

(11)   *n*   (12)   *n*
       /   \   /   \
     n   N   *n*   N
      | | | |
    Kopf   Salat   -chen Salat
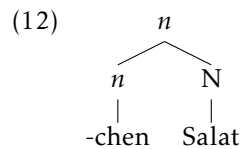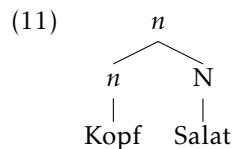
As shown in (12), Wiltschko pursues the idea that diminutive suffixes are analyzed in exactly the same way, i.e. as light nouns that take N-complements. In addition, however, the head noun undergoes head movement to *n*, presumably because of the suffixal nature of *-chen*:

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[9]De Belder's solution is to locate the diminutive morpheme in an additional head (which she calls Size[0]), which is similar to my proposal below. Her analysis does not take into account the parallel nature of diminutive suffixes and numeral classifiers, which will figure prominently in §3.

[10]For discussion of the properties of numeral classifiers in German, see Blühdorn 2006. Blühdorn uses the term "Auxiliar-Substantive" (auxiliary nouns) but notes the similarity to classifiers (2006: 68).

(13)

```
              n
           ╱     ╲
          n       t_N
        ╱   ╲
       N     n
       |     |
     Salat  -chen
```
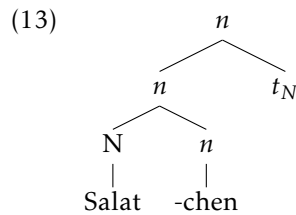
Wiltschko takes this analysis to implement straightforwardly the parallelism between the diminutive suffix and numeral classifiers, by analyzing both as light nouns. She claims that a virtue of this approach is that it renders diminutive formation akin to compounding: diminutives are n-N compounds. Wiltschko cites final devoicing (which applies before the diminutive suffix) and the "projecting" property of the diminutive morpheme (it determines the gender of the resulting noun) as empirical evidence supporting this compounding analysis. I will reject the compounding analysis of diminutive formation in §3.2.2 below.

According to Wiltschko, her theory predicts diminutive suffixes and numeral classifiers to be in complementary distribution; this prediction is borne out, i.e. diminutivized nouns cannot be (further) classified:

(14) a. zwei Glas Schnaps (Austrian German)
        two glass schnaps

     b. zwei Schnapserl
        two schnaps.DIM

     c. * zwei Glas Schnapserl
          two glass schnaps.DIM

(15) a. zwei Glas Bier (Standard German)
        two glass beer

     b. zwei Bierchen
        two beer.DIM

     c. * zwei Glas Bierchen
          two glass beer.DIM

It is not clear, however, that this pattern follows straightforwardly from the n-N analysis. Notice that the assumption underlying Wiltschko's claim is that only one light noun can combine with the nominalized root – but this is a clearly a stipulation, for which no reason is given. By contrast, the account developed in §3 below directly derives the impossibility of (14c) and (15c).

Despite the complementary distribution of diminutive and classifier shown in (14) and (15), it *is* possible to diminutivize the classifier itself, without any change in countability (i.e., the resulting noun phrase is unit-count):

(16) a. zwei Glaserl   Schnaps
        two glass.DIM schnaps

     b. zwei Blättchen Papier
        two sheet.DIM paper

     c. zwei Stückchen Holz
        two piece.DIM wood

By contrast, simultaneous diminution of classifier and head noun is impossible:

(17) a. * zwei Glaserl   Schnapserl
          two glass.DIM schnaps.DIM

6

b. * zwei Blättchen Papierchen
   two   sheet.DIM paper.DIM

c. * zwei Stückchen Hölzchen
   two   piece.DIM wood.DIM

To account for these facts, Wiltschko assumes that due to the suffixal nature of the diminutive morpheme, it requires either movement of N (resulting in an *n*-N compound, as shown in (18)) or else "insertion of another light noun into *n*" (19). The latter strategy yields the diminutivized-classifier pattern in (16), shown in (19):

(18)

$$n$$

n t_i

N_i n

Schnaps   -erl

(19)

$$n_{DIM}$$

n_{DIM} N

n n_{DIM} Schnaps

Glas   -erl
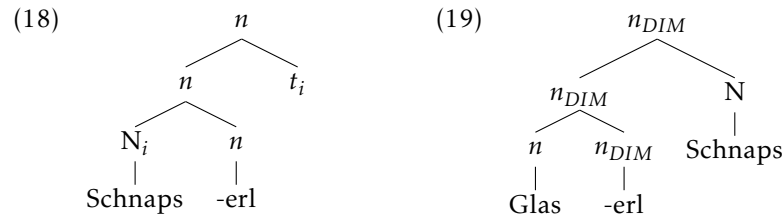
A final piece of data that Wiltschko seeks to incorporate into her analysis involves the quantificational expression *bisschen* (*bisserl* in Austrian German). Wiltschko takes *biss-* to be a "bound root"; being expletive-like, it can assume the place of the moved/inserted noun:

(20) a. ein bisserl Schnaps
      a   bit   schnaps
      'a bit of schnaps'

   b.

$$n$$

n N

$\sqrt{\text{BISS}}_{EXPL}$ n Schnaps

-erl

This expletive-insertion analysis of the *bisschen* construction correctly predicts that *biss-* cannot precede a diminutivized noun (compare (21a) to (20a)):[11]

(21) a. * ein bisserl   Schnapserl
        a   bit.DIM schnaps.DIM

   b. * ein bisschen Bierchen
        a   bit.DIM beer.DIM

I will return to the *bisschen*-construction in §3.2 below (see pp. 18f.). In this case, too, my analysis will differ from Wiltschko's in implementation while retaining the basic idea.

This brief recap of the account sketched in Wiltschko's squib will suffice for now; arguments in its favor as well as its empirical weaknesses will be discussed at various points in the remainder of the paper. The analysis developed below not only overcomes these weaknesses, it will also be shown to account for a further set of data not discussed by Wiltschko. Overall, the account here will follow the spirit of her analysis while making the empirically more accurate predictions, owing to differences in technical implementation.

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[11] But notice that this prediction is again based on the (implicit) restriction about how (many) light nouns can combine with nominalized roots.
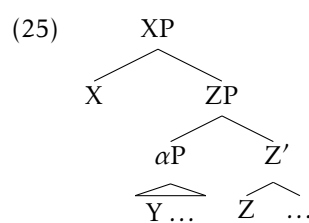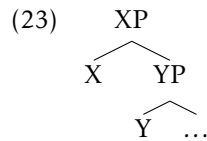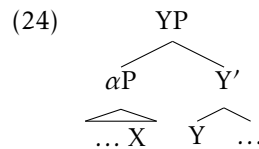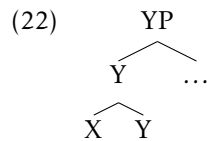
3 A unified analysis

In the remainder of the paper, I will articulate and extend the classifier analysis of German diminutive suffixes proposed by Wiltschko. Thus, my intention is not to refute her basic approach, but to pursue it in some more detail than she does, using a slightly different implementation and taking into account some further data. This more articulated theory will prove superior in its empirical coverage.

3.1 The framework

The general framework assumed here is developed in Julien 2002, 2003, 2007 (see also Svenonius 2007). Roughly, this approach assumes that morphology entirely dissolves into syntax, going in some ways beyond the basic assumptions of "classical" Distributed Morphology (Halle and Marantz 1993, 1994, Marantz 1997); see Julien (2002) for discussion. Importantly for our purposes here, the framework I am assuming denies that *words* have any privileged status in grammar; rather, grammar arranges morphemes into syntactic configurations, some of which yield objects which are cognitively perceived as "words" by the speaker (for extragrammatical reasons). "Word", then, is not a grammatical category (cf. Embick and Noyer 2007: 302).

In this reductionist view of morphology, there are four syntactic configurations which can give rise to a sequence X–Y of morphemes X, Y with characteristic "word"-like distributional properties (Julien 2007: 214):

(22)
```
        YP
       /  \
      Y    …
     / \
    X   Y
```

(24)
```
          YP
         /  \
       αP    Y′
      / \   / \
   … X   Y   …
```

(23)
```
        XP
       /  \
      X    YP
          / \
         Y   …
```

(25)
```
          XP
         /  \
        X    ZP
            /  \
          αP    Z′
         / \   / \
        Y…   Z   …
```

In (22), head movement has rendered two heads adjacent; in (23), the heads are subjacent. (24) and (25) illustrate the possibility of word-creation by a bare head and another head that is appropriately placed within a contiguous specifier; option (24) in particular will be relevant below.[12]

As mentioned above, Julien's program is strongly reductionist, holding that "every morphologically complex word corresponds to one of the configurations shown in [(22–25)]" (Julien 2007: 214). I will argue in what follows that this fairly radical view of the syntax-morphology interface allows for an insightful (explanatory) account of German diminutive-formation that derives the facts discussed in §§2.1 and 2.2 and, moreover, allows for an extension of the classifier analysis. I will now turn to the second basic ingredient of my account: the decomposition of the noun phrase.

Let us first consider the place of classifiers within the functional structure. Svenonius (2008) argues for a three-way distinction among classifiers, noting that while some languages employ all three types, most "classical" classifier languages conflate at least two of them into a single classifier
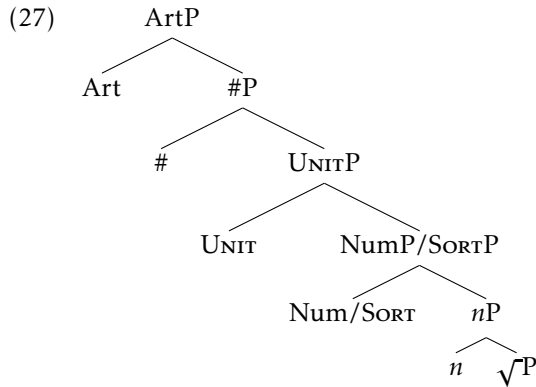
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[12]In very different contexts, similar views have been expressed by Hinterhölzl (1997), Pearson (1997), Koopman and Szabolcsi (2000), Mahajan (2003), Hallman (2004), among others (cf. also Kayne 1994: 40). Notice that the claim that word-formation can be implemented by Spec-head relations goes beyond what is usually assumed even in strongly constructionist models.

category. In this system, numeral classifiers are realizations of a head called Unit, while sortal classifiers are located in Sort; finally, so-called "noun classifiers" are exponents of *n*, the nominalizing affix.

(26) a. Numeral classifiers: Unit
      b. Sortal classifiers: Sort
      c. Noun classifiers: *n* (nominalizing affix)

The details of this typology of classifier types need not concern us here (see Svenonius 2008 and references cited). What is important for our purposes is that Svenonius proposes the following structural hierarchy, based on the classification in (26):[13,14]
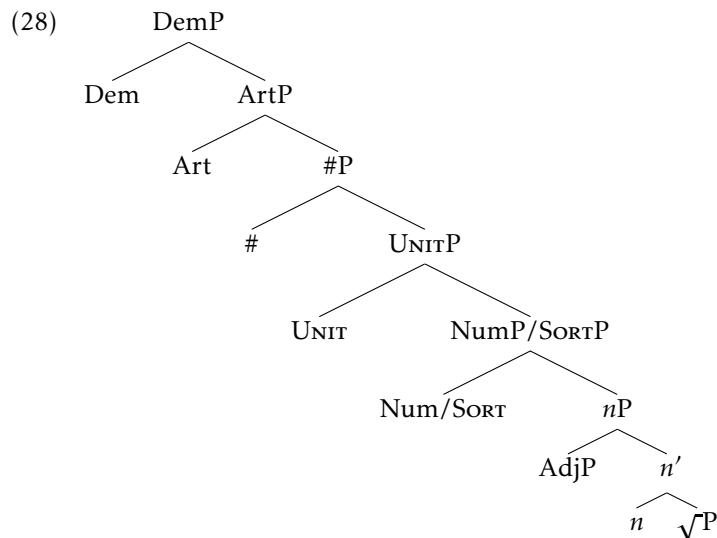
(27)

```
              ArtP
             /    \
          Art      #P
                  /  \
                 #    UnitP
                     /    \
                  Unit    NumP/SortP
                         /      \
                   Num/Sort      nP
                                /  \
                               n    √P
```

Ordering of # (which hosts numerals in its specifier; cf. Corver and Zwarts (2006)) above individuating classifiers is uncontroversial and based on the assumption that individuation has to logically precede quantification (Cheng and Sybesma 1999, Simpson 2005, Borer 2005). In this structure, a Chinese-type classifier would be a conflation of the Sort and Unit heads, perhaps undergoing movement from one to the other. Num is the functional category encoding number properties (a feature [±pl], cf. Embick and Noyer 2007: 307) and inducing basic countability (Bouchard 2002, Borer 2005).

Combining (27) with the typology of phrasal dependents in the noun phrase, Svenonius arrives at the following decomposition:

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[13] Art(icle)P and Dem(onstrative)P replace the traditional DP in Svenonius's analysis.

[14] Here and in what follows, I will differ slightly from the exposition in Svenonius 2008 in the labels used for certain projections. These minor changes are made solely for expository reasons and do not imply any deviance from Svenonius's analysis.

(28)

```
DemP
├── Dem
└── ArtP
    ├── Art
    └── #P
        ├── #
        └── UₙɪₜP
            ├── Uₙɪₜ
            └── NumP/SₒᵣₜP
                ├── Num/Sₒᵣₜ
                └── nP
                    ├── AdjP
                    └── n′
                        ├── n
                        └── √P
```

Plainly, many surface orders of morphemes we find within nouns and noun phrases violate the hierarchy in (28); in these cases, Svenonius argues, the order must be derived by movement. One example that he discusses is a Norwegian definite noun phrase:

(29) disse tre berømte bøk-e-ne
      these three famous book-PL-DEF

      'these three famous books'

Svenonius argues that the N > Pl > Art cluster arises as a result of successive (phrasal) movements which render the relevant heads adjacent.[15] In this case, movement of *n*P and #P (to Spec-Num and Spec-Art, respectively) lead to adjacency of the head noun, the plural marker, and the definiteness marker (Art). Thus, while (28) is taken to be universal, movement operations can yield different surface orders of morphemes.

See Julien 2002, 2007 and Svenonius 2007 for general discussion and further illustrations of this movement-based analysis of morphology. I will now show that Svenonius's decomposition of the noun phrase can be fruitfully employed in the analysis of German diminutives. In particular, I will argue that the functional hierarchy in (28), when combined with phrasal movement leading to the "word" configuration in (24), allows us to improve on Wiltschko's classifier analysis of German-type diminutive morphemes while preserving its crucial insights.

3.2 Deriving diminutives

3.2.1 Numeral classifiers and -*chen* as 'flavors' of Uₙɪₜ

Recall from the discussion in §2.1 that Borer's system, in which a single head (Dɪᵥ) is responsible for countability, is not sufficient to derive finer-grained distinctions between count interpretations; in particular, I argued (following de Belder 2008) that unit-count readings require additional functional structure.

Svenonius's decomposition of the noun phrase (28) allows us to make this proposal precise. In what follows, I will assume (with Bouchard 2002, Borer 2005) that countability (division of masses) is the semantic contribution of the functional head expressing number (Num). As discussed in §2.1, diminution or (in German) addition of a numeral classifier like *Stück* derives from this a more specific *unit*-count reading. This is precisely the function Svenonius ascribes to Uₙɪₜ (the head hosting

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[15]Evidently, the notion of adjacency relevant here is one of linear adjacency, which crucially disregards traces.

numeral classifiers). It is natural, then, to analyze the diminutive morpheme as well as numeral classifiers like *Stück*, *Glas*, etc. as exponents of Unit.[16]

Notice that this particular implementation not only allows for a unified analysis of diminutive morphemes and numeral classifiers (to be developed in what follows), it also allows for these elements to cooccur with number morphology/plural (recall the Dutch data in (2–3)). The noun-phrase structure assumed here thus removes the problem that arose for Borer's structure, which predicts strict complementarity.

Moreover, since Unit c-commands Num, it follows immediately that Unit can determine allomorph selection for Num (cf. the notion of *secondary exponence* as defined by Harley and Noyer 2000). This is exactly what we find: pluralized diminutives invariably require a specific plural marker (zero in Standard German, overt in dialectal German and Dutch (2–3)), independently of the plural marker that combines with the non-diminutivized noun. In my German dialect (Low Rhenish), for instance, the diminutive invariably selects for an *-s* plural:

(30)　a.　die Wässer-ke-s　　(Low Rhenish)
　　　　　the water-DIM-PL

　　　b.
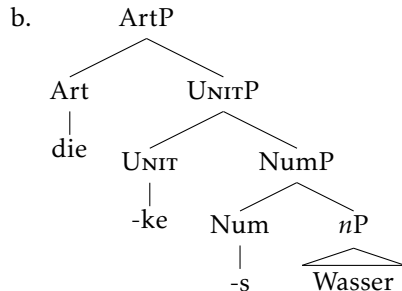
The same is of course true for numeral classifiers: like any other noun, each numeral classifier selects for a particular allomorph of the plural morpheme (cf., e.g., *drei Stück-e Holz* 'three pieces of wood' vs. *drei Blätt-er Papier* 'three sheets of paper'). For some German numeral classifiers, plural morphology is optional under a plural interpretation of the noun phrase (Wiltschko 2005, Blühdorn 2006):[17,18]

(31)　a.　zwei { Stück / Stücke　} Holz
　　　　　two　　piece / piece.PL　wood

　　　b.　zwei { Glas / Gläser　} Bier
　　　　　two　　glass / glass.PL　beer

　　　c.　zwei { Blatt / Blätter　} Papier
　　　　　two　　piece / piece.PL　wood

---

[16]An analysis of German-type diminutive morphemes and numeral classifiers as sortal classifiers (exponents of Sort) or noun classifiers (*n*) is implausible for independent reasons. The diminutive morpheme is uniform and independent of the head noun, and numeral classifiers do not sort or vary according to "essences" and the like. *Stück*, for instance, is used with such diverse nouns as *Zucker* 'sugar', *Käse* 'cheese', and *Vieh* 'cattle'. In other languages, diminutive morphemes may correspond to other classifier types. For instance, Swahili diminutives are associated with a particular noun class (Beard 1998: 62), perhaps indicating that they are noun classifiers in this language.

[17]When the numeral classifier is pluralized, the construction is in fact ambiguous between a quantity (classifier) reading ("a glas-unit of beer") and a container reading ("a glass that contains beer") (see Alexiadou et al. 2007: 410, 462), just like the English construction *a glass of beer* as well as 'pseudopartitive' constructions in Greek and Spanish (Stavrou 1983, Vos 1999). I will set this complication aside here.

[18]Other classifiers require plural morphology under a plural interpretation. Wiltschko (2005) discusses the case of *Prise* 'small amount of powdery substance' which requires overt plural marking for plural interpretations; by contrast, *Mann* (as in *zwölf Mann Besatzung* 'crew of twelve') cannot be overtly pluralized, regardless of the intended interpretation (singular/plural). For the purposes of this paper, I abstract away from these idiosyncratic properties of numeral classifiers. The only important point for me here is that that the exponent of Unit can license exponence of Num, which follows since Unit c-commands Num.

Notice that on the analysis developed here, the functional head that pluralizes a numeral classifier (including *-chen*) is the same head that realizes number marking on the head noun when Unit is absent (I assume that in this case, the complex head $\sqrt{}+n$ raises to Num). We thus correctly predict that in numeral-classifier constructions (including diminutives), number can be realized only once; the head noun in these constructions can never be pluralized.[19] This means that insertion of the plural allomorph is sensitive to the next-higher c-commanding (or immediately adjacent) head (see further §3.3.1 below).

Thus, both numeral classifiers and diminutive morphemes select for the exponent of Num, independently of the plural morphology selected for by the noun when it occurs in isolation. Notice that Unit also c-commands *n*P (the nominalized root), accounting for the fact that German-type diminutive morphemes only attach to nouns: only *n*Ps are licensed by the c-commanding Unit-head.[20]

Now, in order to derive the actual surface order of morphemes from the underlying structure in (30b), movement of the nominal to some position above Num and Unit is required. First, the root raises to *n* (head movement); moreover, I suggest that *n*P raises to Spec-Unit (phrasal movement):[21,22]

(32)   a.   die zwei Hölzchen
            the two wood.DIM

       ‘the two (small) pieces of wood’

       b.
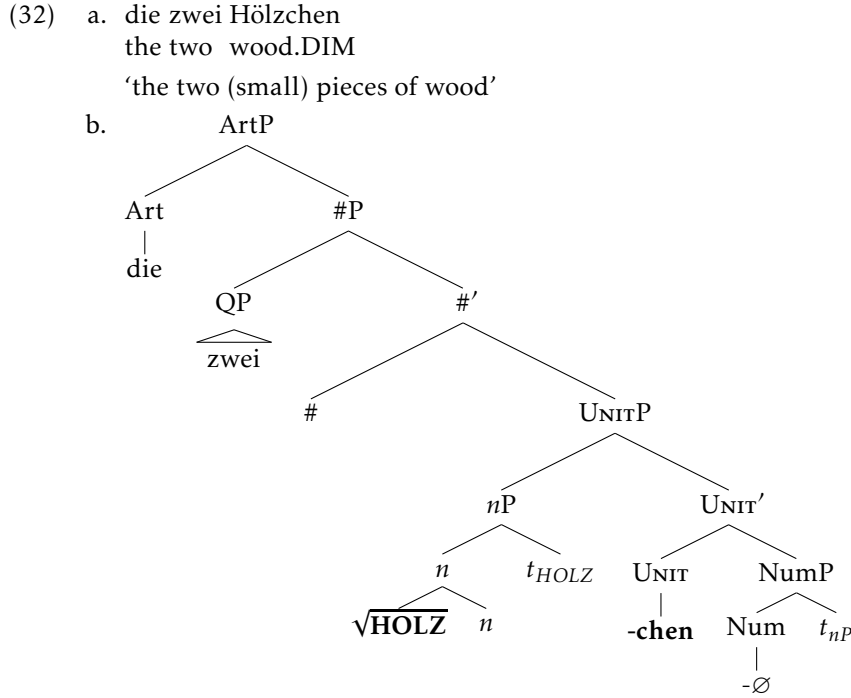
Movement of *n*P as shown in (32b) is triggered by the clitic-like nature of the diminutive morpheme, as will be argued in §3.2.2 below.[23] The root ends up linearly adjacent to the diminutive

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[19]See §3.3.2 for an apparent exception.

[20]Crosslinguistically, this strict categorial restriction of the diminutive morpheme appears to be the exception rather than the rule: in many languages, diminutives can be derived from bases of various categories. See Stump 1993, Dressler and Barbaresi 1994, Jurafsky 1996, Donalies 2006, among others. This suggests that the diminutive morpheme in these languages is actually a noun classifier/nominalizer.

[21]Adjectival modifiers that merge as specifiers of or adjuncts to *n*P are thus correctly predicted to be pied-piped to a position between numerals and numeral classifiers. I will set the issue of adjectival modification aside for the purposes of this paper.

[22]Compare Simpson's (2005) analysis of noun-phrase-internal movement in Thai, where *n*P (in my terms) ends up preceding numerals and demonstratives, indicating that in this language, *n*P-raising targets a higher specifier position.

[23]Alternatively, one could follow Zhang (2009) in claiming that numeral classifiers are endowed with an inherent EPP-feature. On this view, then, *-chen* would be a free morpheme, which however happens to require an overt specifier. I will disregard this possibility in what follows, since the motivation for movement proposed in §3.2.2 below is more principled.

suffix (recall (24)); the latter triggers umlauting in the stem, as further discussed in §3.3.3 below. (In what follows, I will abstract away from *n*P-internal head movement of the root to the nominalizing head.)

Notice, incidentally, that this movement to Spec-Unit targets a position that is hierarchically quite high. Since categorizing heads and number (Num) are lower, the analysis derives Booij's (2002) observation that the diminutive suffix (in both Dutch and German) 'closes' the word for further derivation involving phonologically cohering suffixes.[24] Presumably for the same reason, other suffixes that impede further word formation do typically not block diminutive formation (as also noted by Booij).

As discussed in §2, German has a second option of expressing the unit-count reading, namely the numeral-classifier construction. To express the parallel nature of the diminutive suffix and numeral classifiers, I will take both to be realizations of Unit. Since the numeral classifier is a free morpheme, it does not trigger obligatory movement to its specifier:[25]

(33) a. zwei Stück(e)   Holz
          two   piece(.PL) wood

     b.
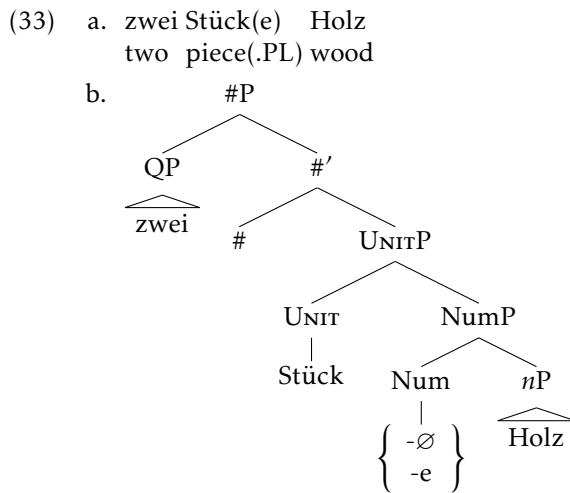
It is worth that a *de facto* identical structure for numeral-classifier phrases is proposed by Stavrou (2003) and, following Stavrou, Alexiadou et al. (2007: 425ff.).[26]

So far, the empirical coverage of my analysis is similar to that of Wiltschko's, which was discussed in §2.2 above. Both analyses postulate a parallel underlying structure for diminutives and numeral-classifier constructions; the former (but not the latter) require an additional movement step. The theoretical difference is that for Wiltschko, this movement is head movement, while I argue (following Julien 2002, 2007) that "word"-formation in this case results from movement to Spec (as in (24) above).
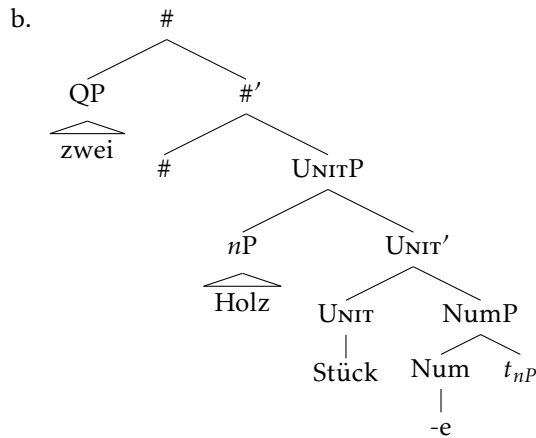
Recall now that for Wiltschko, movement of the nominalized root to the light noun is possible only if the latter is affixal (i.e., in the case of diminutive formation): since her account is based on the stipulation that only one light noun can combine with the head noun, movement is not predicted to be possible in combination with a numeral classifier. By contrast, my analysis allows for *optional* movement to Spec-Unit whenever the exponent of the head of that phrase is non-affixal. I claim that in this case, raising of *n*P (exactly as in (32b) before) yields a 'compound' structure:

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[24]Non-cohering suffixes are independent prosodic words and can thus attach more freely, meaning that they can combine with UnitP. See Booij (2002) for some discussion

[25]The same is true for standard examples for classifiers in typical classifier languages like Chinese, where classifiers are free morphemes, hence do not trigger raising (but see Simpson 2005). Alternatively, it might be that both German *-chen* and Chinese-style numeral classifiers are free morphemes but bear an EPP-property, which is satisfied by movement in German but by (external) Merge in Chinese – see note 23.

[26]Stavrou refers to these constructions as "measure-phrase constructions" but acknowledges that the distinction between these and classifier constructions is essentially terminological. Crucially, in Stavrou's structure just like in the one proposed here, the phrases hosting classifiers in classifier languages and words like *Stück*, *Flasche*, etc. are identified.

(34)   a. zwei Holzstücke
           two   wood.piece.PL
           'two pieces of wood'

   b.

$$\#$$

```
                          #
                        /   \
                      QP     #'
                      /     /   \
                   zwei    #     UNITP
                               /      \
                             nP        UNIT'
                             /        /     \
                          Holz     UNIT      NumP
                                    |       /    \
                                  Stück   Num    t_{nP}
                                           |
                                          -e
```

My claim, then, is that diminutives as well as analytic *and* compound forms involving numeral classifiers are derived from the same underlying structure, with UNITP giving rise to unit-count interpretations. The parallelism between phrasal forms like *Stück Holz* 'piece of wood', *Scheibe Brot* 'slice of bread', *Flasche Milch* 'bottle of milk' on the one hand and compounds like *Holstück*, *Brotscheibe* and *Milchflasche* on the other is also recognized by Blühdorn (2006), who notes:
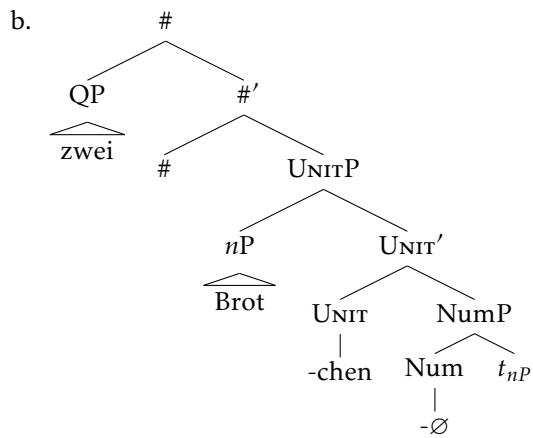
> Auxiliar-Substantive [in my terms, numeral classifiers – DO] können dem Vollsubstantiv im Deutschen auch nachgestellt werden. Sie bilden dann das Grundwort von Komposita wie *Brotscheibe*. Die sich dabei zuweilen ergebenden Bedeutungsunterschiede (vgl. *Flasche Milch* vs. *Milchflasche*) betreffen nur marginal die Zählbarkeit der komplexen substantivischen Ausdrücke [...]. Substantivische Einheiten wie *Scheibe Brot* oder *Brotscheibe* bezeichne ich, im Einklang mit der Tradition, als (komplexe) Individuativa oder Zähl-Substantive.[27] (Blühdorn 2006: 55)

As emphasized by Blühdorn, the important point is that both forms unambiguously give rise to unit-count interpretations.[28] As observed by de Belder (2008) and Wiltschko (2005), the same is true for diminutives (§2.1). Importantly, my analysis goes beyond Wiltschko's in that it subsumes compound forms involving numeral classifiers, thus allowing for a unified structural analysis of unit-count noun phrases:
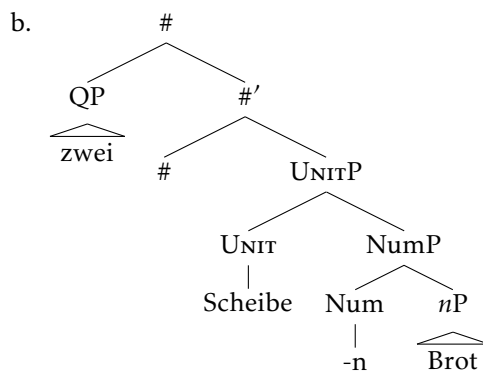
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[27]"In German, auxiliary nouns can alternatively follow the head noun. In this case, they function as the base noun of compounds like *Brotscheibe* 'slice of bread'. The differences in meaning that may result occasionally (cf. *Flasche Milch* 'bottle of milk' vs. *Milchflasche* 'milk bottle') affect the countability of the complex nominal expressions only marginally [...]. In accordance with traditional terminology, I refer to nominal units such as *Scheibe Brot* 'slice of bread' or *Brotscheibe* 'slice of bread' as (complex) individuatives or count nouns."

[28]The differences in meaning that Blühdorn alludes to are grounded in the idiosyncrasy inherent to compounding. Compound forms involving numeral classifiers (such as *Milchflasche* 'milk bottle') are ambiguous in various ways, owing to the well-known fact that the semantic relation between members of a compound is highly flexible, depending on contextual factors, etc. Plausibly, these compounds have various different underlying sources.
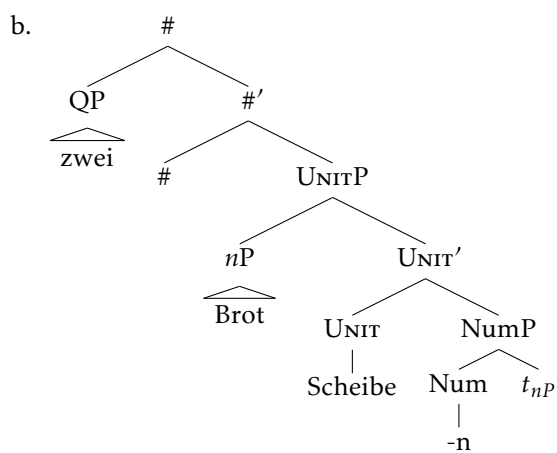
(35) a. zwei Brötchen
          two   bread.DIM
          'two small breads (rolls)'

   b.
                        #
              ┌─────────┴─────────┐
             QP   #'
             ╱╲   ┌────────┴────────┐
           zwei   #   Unit P
                              ┌──────────┴──────────┐
                             nP   Unit′
                             ╱╲   ┌─────────┴─────────┐
                           Brot   Unit   NumP
                                          │   ┌───────┴───────┐
                                        -chen   Num t_{nP}
                                                      │
                                                      -∅

(36) a. zwei Scheiben Brot
          two   slice.PL bread
          'two slices of bread'

   b.
                        #
              ┌─────────┴─────────┐
             QP   #'
             ╱╲   ┌────────┴────────┐
           zwei   #   Unit P
                              ┌──────────┴──────────┐
                            Unit   NumP
                             │   ┌─────────┴─────────┐
                          Scheibe   Num   nP
                                          │   ╱╲
                                          -n   Brot

(37) a. zwei Brotscheiben
          two   bread.slice.PL
          'two slices of bread'

   b.
                        #
              ┌─────────┴─────────┐
             QP   #'
             ╱╲   ┌────────┴────────┐
           zwei   #   Unit P
                              ┌──────────┴──────────┐
                             nP   Unit′
                             ╱╲   ┌─────────┴─────────┐
                           Brot   Unit   NumP
                                          │   ┌───────┴───────┐
                                        Scheibe   Num t_{nP}
                                                      │
                                                      -n

Wiltschko's theory is more limited, in that it does not unify the full range of German unit-

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count constructions, including the two subforms of numeral-classifier constructions. By contrast, the present account covers the entire empirical ground, by combining Blühdorn's insight concerning the unity of numeral-classifier constructions (analytic and compound forms) and Wiltschko's insight concerning the unity of diminutives and (analytic) numeral-classifier constructions. Relying on Svenonius's universal noun-phrase structure, my account derives this unity in an elegant way.

Most mass nouns which can combine with a numeral classifier allow for all three alternative derivations of unit-count interpretations.[29] Some further examples are given below:

(38) a. drei Bierchen
three beer.DIM.PL

b. drei Glas Bier
three glass beer

c. drei Biergläser
three beer.glass.PL

(39) a. drei Salätchen
three lettuce.DIM.PL

b. drei Köpfe Salat
three head.PL lettuce

c. drei Salatköpfe
three lettuce.head.PL

(40) a. drei Weinchen
three wine.DIM.PL

b. drei Flaschen Wein
three bottle.PL wine

c. drei Weinflaschen
three wine.bottle.PL

(41) a. drei Zückerchen
three sugar.DIM.PL

b. drei Stück Zucker
three piece sugar

c. drei Zuckerstücke
three sugar.piece.PL

(42) a. drei Papierchen
three paper.DIM.PL

b. drei Blätter Papier
three sheet.PL paper

c. drei Papierblätter
three paper.sheet.PL

(43) a. drei Käffchen
three coffee.DIM.PL

b. drei Tassen Kaffee
three cup.PL coffee

c. drei Kaffeetassen
three coffee.cup.PL

The main virtue of the account developed here then lies in its capacity of deriving this tripartite pattern of unit-count structures in German in a uniform fashion, relying on a universal noun-phrase structure and movement.[30] Each numeral classifier (*-chen*, *Stück*, etc.) has its specific descriptive content, specifying the nature of the unit of measurement (see further §3.3.1 below); the only difference between *-chen* and the other classifiers is that the former but not the latter triggers obligatory movement of *n*P to its Spec (to be made precise in the following section). The account thus correctly predicts that diminutive formation must be implemented via specifier-head alignment (24), while numeral classifiers can be employed in both phrasal constructions (36) and compounds (37).[31]

Consider now some further facts mentioned in §2.2. First, as discussed in §2.2, "recursive clas-

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[29]It must be noted that some nouns do not allow all three variants (diminutive, numeral-classifier phrase, and numeral-classifier compound). For instance, the classical mass noun *Möbel* 'furniture' in German only allows for diminutive formation (*das Möbelchen* 'the furniture.DIM') and for compounding with a numeral classifier (*das Möbelstück* 'the furniture.piece', *drei Möbelstücke* 'three furniture.piece.PL'), yielding a unit-count reading in both cases. There is no phrasal numeral-classifier construction, however: **drei Stücke Möbel*. Thus, with *Möbel*, *n*P-raising to Spec-Uɴɪᴛ seems to be obligatory. On the other hand, there are cases like *Vieh* 'cattle', which only allow for the analytic construction: *drei Stück Vieh* 'three piece cattle' but **drei Viehstücke* 'three cattle.piece.PL'. At present, I have nothing to say about the reason for these idiosyncrasies, which are somewhat unexpected on the view elaborated here. It remains true, however, that the overwhelming majority of (mass) nouns participates in the formation of all three expressions, as observed by Blühdorn (2006).

[30]Superficially similar word-order alternations with (some, not all) Chinese classifiers are reported in Zhang (2009: 16).

[31]Corver (1998: 233) proposes a very different movement analysis for pseudopartitives, building on "predicate inversion" (den Dikken 1998). Corver proposes that the numeral classifier originates as a complement to the head noun and then raises to some higher functional projection. While I cannot go into a detailed discussion of this proposal here, I merely note that Corver's system has no obvious way of deriving the tripartite pattern of numeral classification in German.
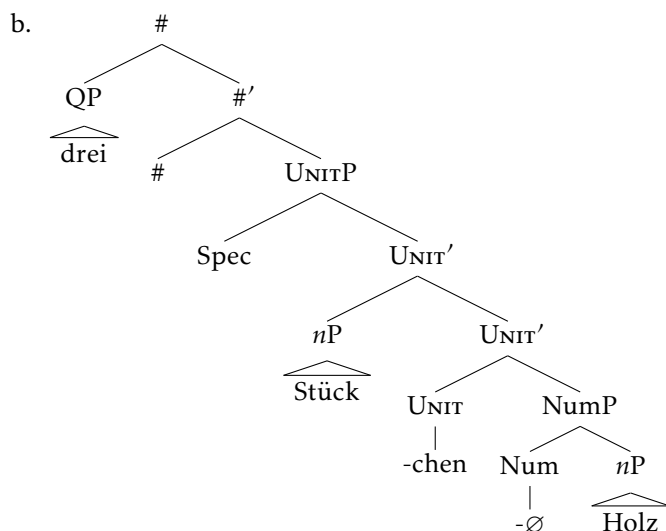
sification" is possible: numeral classifiers can be diminutivized (44a).[32] Second, co-occurrence of a numeral classifier with a diminutivized noun is impossible (44b). Third, numeral classifier and head noun cannot be diminutivized at the same time (44c).

(44) a.   drei   Stückchen Holz
            three piece.DIM wood

    b. * drei   Stück Hölzchen
            three piece wood.DIM

    c. * drei   Stückchen Hölzchen
            three piece.DIM wood.DIM

The numeral classifier that appears in the recursive-classification construction (44a) is a modifier that contributes to the meaning of the classifier (*-chen*) by further specifying the nature of the counting unit. Therefore, I suggest to analyze the numeral classifier in constructions like (44a) as a modifier of U<small>NIT</small>:[33]

(45) a. drei Stückchen Holz

    b.

Notice that the structure in (45b) predicts that movement of the head-noun *n*P is possible but not obligatory: *-chen* finds a host in the numeral classifier (acting as a modifier), hence does not require *n*P to raise. Nevertheless, Spec-U<small>NIT</small> is still available as a landing site; and the predicted compound forms to indeed exist:

(46) a. drei   Biergläschen
          three beer.glass.DIM

    b. drei   Salatköpfchen
          three lettuce.head.DIM

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[32]See Zhang (2009) for what might be similar constructions in Chinese and Korean (where, however, two different kinds of classifiers are involved).

[33]Similar constructions are found in Mandarin Chinese. Compare to (44a) the following case (from Zhang 2009: 12):

(1)   3 dà zhāng zhǐ
      3 big CL   paper
      'three big pieces of paper'

c. drei   Weinfläschchen
three wine.bottle.DIM

d. drei   Zuckerstückchen
three sugar.piece.DIM

e. drei   Papierblättchen
three paper.sheet.DIM

f. drei   Kaffeetässchen
three coffee.cup.DIM

Thus, the existence of these forms is accounted for straightforwardly by the present account: *n*P can – but need not – raise to Spec-Unit when the diminutive suffix is morphologically supported by a linearly adjacent element, in this case the numeral classifier acting as a modifier.

At the same time, the *non*-existence of the forms exemplified by (44b) and (44c) above follows directly from the assumptions made here. There is, plainly, no way to generate either form in the present model. Numeral classifiers cannot co-occur with diminutives, since dimiutive formation involves movement of *n*P to Spec-Unit; hence, it is impossible for the numeral classifier to precede the diminutivized noun. Simultaneous diminution of the numeral classifier and the head noun is ruled out directly by the functional structure of the noun phrase assumed here (28): selectional restrictions yielding the universal functional hierarchy in (28) prohibit more than one Unit-head.

As noted in §2.2, Wiltschko's theory has no non-stipulative way of ruling out such combinations: since both numeral-classifier constructions and diminutives are light nouns that combine with the head noun, 'stacking' of light nouns cannot be ruled out on principled grounds.

A further correct prediction that falls out from the analysis developed here is that the lefthand member of a compound can never be a diminutive. Witness the following examples:

(47) a. * ein Bierchenglas
a   beer.DIM.glass

b. * drei   Hölzchenstücke
three wood.DIM.piece.PL

c. * drei   Weinchenflaschen
three wine.DIM.bottle.PL

d. * drei   Papierchenblätter
three paper.DIM.sheet.PL

Again, there is simply no way to derive this pattern in the framework assumed here, given the assumptions sated in §3.1.

Finally, let us consider the *bisschen* construction, briefly touched on in §2.2 in connection with Wiltschko's analysis. Some examples are given below:

(48) a. ein bisschen Wasser
a   bit.DIM water

b. das bisschen Holz
the bit.DIM wood

c. ein bisschen Kaffee
a   bit.DIM coffee
'a/the bit of …'

The reason why this construction is discussed here (as opposed to other, superficially similar constructions, such as *etwas Kaffee* 'some coffee') is of course the presence of diminutive *-chen*. Across German dialects, the morpheme that occurs in (the dialectal counterparts to) *bisschen* is identical to the one that is employed in diminutive formation, hence I take *bisschen* to be a true diminutive.

Moreover, as noted by Chierchia (1998: 55), a hallmark of classifiers is that they require an indefinite article, a quantificational or cardinality element (49a). This is the case with *bisschen* (49b), but not with superficially similar indefinite quantifiers (49c):

(49) a. * Glas Bier
          glass beer

      b. * bisschen Bier
          bit.DIM beer

      c. wenig Bier
          little   beer

Thus, I take it that *bisschen*-constructions involve a Unit-head hosting the diminutive morpheme.

Recall from §2.2 that Wiltschko analyzes the "bound root" *biss* as an expletive, which provides a host for the affixal diminutive morpheme, just like the numeral classifier does in cases like (44a), or the nominalized root in diminutive-formation. But the fact that *biss* 'bite' does not appear to be entirely devoid of semantic content (albeit being "bleached") in this context militates against an expletive analysis. I argued above that numeral classifiers in constructions like (44a) are essentially modifiers of the diminutive morpheme heading UnitP. The obvious move, then, is to analyze *bisschen* constructions in a parallel fashion.[34]

Notice, however, that there is an interesting asymmetry between the "recursive classification" construction on the one hand and the *bisschen* construction on the other. Consider the following:

(50) a. ein Stückchen Holz
          a   piece.DIM wood

      b. ein bisschen Holz
          a   bit.DIM wood

(51) a. ✓ ein Holzstückchen
          a   wood.piece.DIM

      b. * ein Holzbisschen
          a   wood.bit.DIM

The cases in (50), I argue, are essentially parallel: *Stück* and *biss-* are modifiers of Unit (= *-chen*). In both cases, my analysis correctly predicts *n*P-movement to be non-obligatory, since the modifiers act as morphological hosts of the suffixal diminutive morpheme.

Other than Wiltschko's, my account attempts to also derive compound forms like (51a), incorporating Blühdorn's (2006) insight that these should be seen as permutations of the analytic numeral-classifier construction. As argued above, these forms are derived by (non-obligatory) movement of *n*P to Spec-Unit. Now, given that I argue (following Wiltschko) that the cases in (50) are essentially parallel, why is it that *bisschen* never allows compounding (= *n*P-raising to Spec-Unit), as shown in (51b)? (It is a fact that there are no compounds of the form *N+bisschen*.)

I would like to suggest that compounding in this case is ruled out by anti-locality. Anti-locality is a well-established constraint in the syntactic literature (see, e.g., Bošković 1994, Abels 2003, Kayne 2005, Boeckx 2008), which rules out movement of the complement of a head X to the specifier of that head, the reason being that this movement is 'too local':[35]

(52) *Anti-locality* (cf. Abels 2003: 12)
      $*[_{XP} \text{YP} [_{X'*} \text{X}^0 t_{YP}]]$

---

[34]An alternative analysis, which I will not explore here, would be to analyze *bisschen* as a complex Unit-head, in line with Julien's (2002: 315) claim that complex heads can be base-generated.

[35]Notice that, as indicated by 'X'*', (52) rules out any movement that takes place within the same XP, no matter how many bar-levels intervene.

I propose that this constraint also rules out compounds of the kind (51b). To see this, consider the fact that *bisschen* is incompatible with pluralization. Although *bisschen*-constructions denote discrete, countable units (hence involve UnitP), they can only express singular cardinality. In this regard, *bisschen* constructions differ from numeral-classifier constructions:

(53) a.   drei Stückchen Holz
           three piece.DIM wood

           'three pieces of wood'

      b. * drei bisschen Holz
            three biss.DIM wood

I therefore propose that presence of *biss* as a modifier in UnitP is incompatible with presence of Num, hence NumP (leaving to future work the question why this is the case). The structure of the impossible (51b) is then as follows:

(54) a. * ein Holzbisschen (= (51b))
            a   wood.bit.DIM

      b. ArtP

```
                ArtP
               /    \
             Art    UnitP
              |     /    \
             ein  nP      UnitP
                 /\      /     \
               Holz    nP      Unit′
                      /\      /    \
                   biss-   Unit   t_nP
                            |
                          -chen
```

The structure in (54b) provides a straightforward structural explanation for the asymmetry exemplified in (51). In (54b), movement of *n*P violates anti-locality: *n*P is the complement of Unit and thus cannot raise to Spec-Unit by (52). I suggest that this is the formal reason for the impossibility of (51b) and hence *N+bisschen* compounds in general.

By contrast, there is no violation of anti-locality in the derivation of (51a), where NumP is present in the structure (recall that number/plural marking on diminutives is overt in dialectal German and Dutch):

(55) a. ein Holzstückchen   (= (51a))
          a   wood.piece.DIM

      b. ArtP

```
                ArtP
               /    \
             Art    UnitP
              |     /    \
             ein  nP      Unit′
                 /\      /    \
               Holz    nP      Unit′
                      /\      /    \
                   Stück   Unit    NumP
                            |      /   \
                          -chen  Num   t_nP
                                  |
                                 -∅
```

We thus have a straightforward way of explaining the asymmetry in (51), which is unexpected and unexplained under Wiltschko's analysis.

The analysis proposed here can thus capture a good part of the relevant data in an elegant and uniform way, relying merely on the assumption – argued for at length in Julien 2002, 2007, Svenonius 2008, 2007 and references cited there – that movements are triggered by morphological needs of functional heads in the noun phrase. The (expected and desirable) result of this kind of analysis is that the diminutive pattern (where movements result in a "word" configuration) and the numeral-classifier pattern (where Unit is realized as a free morpheme, resulting in a phrasal configuration) are derived in essentially the same way, despite their different word/phrase status.[36] Thus, the present analysis can be seen as further support for the hypothesis that "words" have no status in the theory of I-language (see also references in note 12).

3.2.2 The motivation for movement

I have argued in the preceding section that diminutive formation is derivationally implemented by phrasal movement to the specifier of the diminutive morpheme. In this section, I will argue that this movement is motivated by the phonological deficiency of the diminutive morpheme (as an exponent of Unit). I will thus argue against Wiltschko's claim that diminutive formation is akin to compounding, and show instead that the result of diminution is a single prosodic unit (ω). As a side effect of the arguments presented below, *-chen* is shown to be a cohering suffix (in the terminology of Booij 1995, 2005).[37]

Notice first that *-chen* [çən] (and its dialectal variants) has no full vowel, hence is unable to bear stress. As noted by Wiese (1996b: 70), this is a striking discrepancy between the diminutive morpheme and other CV-initial suffixes in German, all of which have the segmental make-up of (possible or actual) German words.

Despite this discrepancy, Wiese argues that *-chen* is an independent phonological word, i.e. it does not cohere with its host. One piece of evidence he presents is gapping. CV-initial derivational suffixes in German (such as *-schaft*, *-bar* and *-heit*) can be gapped (56), while vowel-initial suffixes can not be (57):

(56) a. Ritter- und Bauern-schaft
          knight and farmer-hood

          'knightage and farming community'

      b. halt- und brauch-bar
          keep and use-able

          'lasting and useful'

(57) a. * winz- oder ries-ig
            tiny   or   giant-Adj

      b. * Trink- und Ess-er
            drink and eat-er

            'drinker and eater'

Wiese (1996b: 68ff.) argues that the diminutive morpheme allows gapping just like the CV-initial suffixes in (56). He gives the following examples:

(58) a. Väter- und Mütter-chen
         father and mother-DIM

---

[36]Harley (2008) holds a similar view with regard to compounds like *truck driver* and phrases like *driver of the truck*.

[37]The discussion in this section disregards *-lein*, which I take to be an allomorph of *-chen*; see note 3. However, all arguments presented below apply equally to Austrian German *-erl* and Low Rhenish *-ken* (and presumably all other dialectal variants).

b. Brüder- oder Schwester-chen
brother or   sister-DIM

These cases are clearly exceptional, however. Consider the following examples, all of which are bad:

(59) a. * Äute- und Fits-kes   (Low Rhenish)
car   and bike-DIM.PL

b. * Hölz- und Stöck-chen (Standard German)
wood and stick-DIM

c. * Wässer- und Bier-chen
water   and beer-DIM

The reason why the cases in (58) appear acceptable is that the gapped lefthand forms are homophonous with the independently existing plural forms of *Vater* 'father' and *Bruder* 'brother'. By contrast, this is not the case in (59), and gapping becomes impossible. Wiese's gapping argument is not sound.

Wiltschko (2005) argues that final devoicing provides evidence for her compounding analysis of diminutive formation. In German, a final obstruent in the first member of a compound is always devoiced; by contrast, final devoicing does not apply to a stem when an inflectional suffix is added:

(60) a. Hand [hant] 'hand'
b. Handschuh [hantʃuː] 'glove'
c. Hände [hɛndə] 'hands'

(61) a. Wald [valt] 'forest'
b. Waldbrand [valtbʀant] 'forest fire'
c. Wälder [vɛldɐ] 'forests'

In diminutives, just like in compounds, the semantic head noun always exhibits final devoicing (Wiese 1996b: 65):

(62) a. Händchen [hɛntçən] 'hand.DIM'
b. Wäldchen [vɛltçən] 'forest.DIM'

Thus, final devoicing applies as if the diminutive suffix were the second member of a compound (see also Dressler and Barbaresi 1994: 110). But notice that this does not in fact show that diminutive formation bears any formal similarity to compounding. Devoicing in German occurs at the end of the *syllable*, and hence implies word-final devoicing (Wetzels and Mascaró 2001: 207). In autosegmental terms, devoicing is typically analyzed as delinking of a default [+voice]-feature of obstruents in syllable-final position (cf. Wiese 1996b: 204). Absence of final devoicing indicates resyllabification: a stem-final obstruent is reassigned to a syllable onset (*Hän.de* in (60c), *Wäl.der* in (61c)). But notice that resyllabification in (62) would lead to inadmissible consonant clusters (*Hän.dchen*, *Wäl.dchen*). Thus, there is a natural reason for final devoicing in the final syllable of the stem in diminutives, but it does not in any way show a deeper similarity between diminutives and compounds.

It has been claimed that lack of fricative assimilation in diminutives is an indication of the prosodic independence of the diminutive morpheme. As discussed by Hall (1989) and others, some (apparent) diminutive forms are exceptions to the rule that relates velar fricative ([x]) and palatal fricative ([ç]), yielding the familiar *ich/ach*-alternation. In general, the velar fricative appears after back vowels; elsewhere the palatal fricative appears. However, the *-chen* suffix is invariably realized as a palatal fricative, even after back vowels (cf. Iverson and Salmons 1992: 138). This is taken by Iverson and Salmons and others to show that diminutives are parallel to compounds, which show the same lack of fricative assimilation:

(63)   a. Fotochemie [foːtoːçeːmiː] 'photo chemistry'
        b. Megachinese [meːɡaçmeːsə] 'giant Chinese'

This argument, even if correct, need not concern us here. The reason is that I will argue in §3.3 that only umlauting *-chen* is a 'true' diminutive, i.e. an exponent of Uɴɪᴛ. Once umlaut has applied, final stem vowels are front, hence no problem arises. Non-umlauting *-chen* is a hypocoristic name-marker, and something needs to be said about why it resists fricative assimilation; but given the arguments in §3.3 below, we can safely conclude that the problem of fricative assimilation has no relevance to the phenomenon at issue here, i.e. the nature of classifier/diminutive *-chen*.

Let me briefly mention one final piece of evidence before moving on. Raffelsiefen and Brinckmann (2007) present some psycholinguistic evidence which they take to indicate the non-cohering nature of diminutive *-chen*. They note that in contexts where the sequence *chen* is not suffixal (*Speichen* 'spokes', *Eichen* 'oak.PL', etc.), the fricative is followed by a syllabic nasal; by contrast, the schwa in diminutive *-chen* is less often reduced in this way. Raffelsiefen and Brinckmann conclude that "the occurrence of schwa [in diminutives] can be related to the independently motivated prosodic organization of the suffix *-chen* outside the phonological word of the stem" (p. 1444). Even setting aside the less than conclusive factual results they present, there is no reason to suppose that schwa in diminutive *-chen* is not epenthetic. But if *-chen* is underlyingly [çn̩], then their conclusion does not follow.[38]

In conclusion, there is no evidence for phonological independence of the diminutive morpheme, or for a similarity between diminutive-formation and compounding. Notice that if diminutive formation were regular compounding, it would be quite surprising that – as I argued above – movement to support *-chen* is obligatory, whereas compounding with 'free-standing' numeral classifiers (the *Stück Holz/Holzstück* alternation) is not obligatory. Thus, diminutive formation is not compounding, but Spec-head alignment (24), driven by morphophonological needs of the diminutive morpheme. Given the deficient segmental make-up and resulting inability to bear stress, we can essentially take the diminutive morpheme to be a clitic element, in the purely phonological sense of the term ("accentless" elements; cf. Wackernagel 1892). This suggests that diminutive formation is akin to syntactic movement taking place to support a clitic cluster to the right of the landing site. Halpern (1995) proposes that "second-daughter" placement of Serbo-Croation clitic clusters arises in this way, i.e. by syntactic movement of an XP to the left of the *in situ* clitic cluster:

(64)   [Zeleno auto]$_i$ mi   je t_i kupio   (Serbo-Croatian)
         green   car   me.DAT aux.3SG   bought
       'He bought me a green car'

See Raposo and Uriagereka (2005) for somewhat similar proposals concerning clitic placement in Iberian languages. See note 23 for an alternative implementation in terms of EPP. In any event, the result is that movement is required for well-formedness in diminutives but not in numeral-classifier compounds, despite the structural parallelism between the two constructions argued for in this paper.

3.3 On the featural content of the diminutive morpheme

3.3.1 Semantic and formal features

I will not attempt here to describe the full range of meanings (including connotative and metonymic meanings) associated with German diminutives; for some pertinent observations, see Donalies (2006: 43f.), Dressler and Barbaresi (1994: 116–170), Jurafsky (1996) Blühdorn (2006: 73). I will instead focus on the properties that are directly relevant to the proposal developed in this paper. As for the descriptive content of the diminutive morpheme, I will merely state the obvious, namely that it is

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[38]I am indebted to Sverre Jonsson for a helpful discussion on the issues raised here.

associated with smallness; *N-chen* essentially means "small unit of N".[39] Notice that this meaning makes the diminutive incompatible with kind-like interpretations:

(65)   a.   # zwei Sorten Bierchen
             two   sorts   beer.DIM

       b.   # zwei Arten Hölzchen
             two   kinds beer.DIM
             'two kinds of …'

In addition, as argued in §2.1 above, I assume that the diminutive morpheme acts semantically as a classifier, i.e. a "partial function from pluralities into sets of atoms constituted by members of the pluralities" (Chierchia 1998: 72), hence giving rise to what de Belder (2008) calls unit-count interpretations. We may implement these properties of *-chen* by assuming that it has the semantic features [+unit], [+small].

Similarly, other numeral classifiers (like *Stück* 'piece' or *Glas* 'glass') have descriptive content specifying the nature of the unit that measures the head noun (cf. Löbel 2001). In all cases, the resulting noun phrase is referentially unitary, i.e. it has a single referent (cf. Alexiadou et al. 2007: 414ff.).
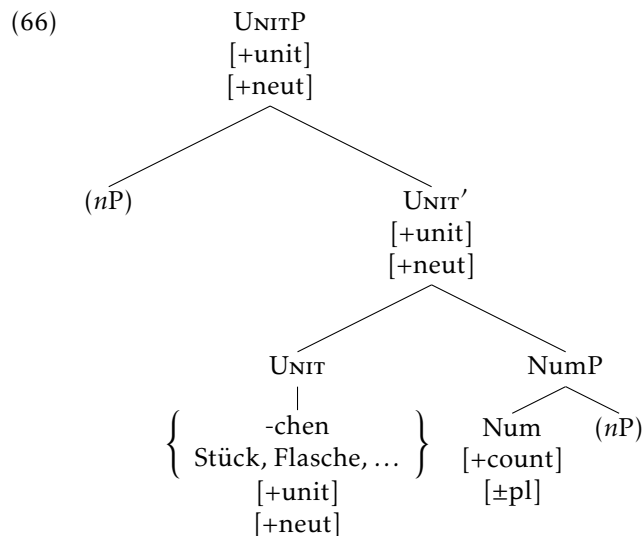
Being exponents of a functional head Unit (see §3 below), German-type numeral classifiers (including the diminutive morpheme) can be taken to be semi-lexical categories, in the sense of van Riemsdijk (1998), Corver and van Riemsdijk (2001a); this view is articulated by Alexiadou et al. (2007: 435). Notice that the degree of "lexicality" of classifiers generally bears on the issue of Vocabulary Insertion. Having descriptive content, German-type numeral classifiers (including the diminutive morpheme) are inserted early, i.e. they do not compete for insertion. Julien (2002: 315) proposes that the difference between derivational and inflectional morphology is solely a matter of the semantic component. At this interface, derivational morphemes are interpreted as lexical categories, instructing certain types of concepts (events, properties, entities, etc.); inflectional morphemes do not map onto any of these conceptual categories and are thus functional. Evidently, this view dovetails neatly with the theory presented here, according to which both diminutive "suffixes" and numeral-classifier "words" map onto UNIT concepts (with varying further specifications of the unit, e.g. smallness, "piece-hood", etc.).

Concerning formal features of *-chen*, one of the properties mentioned above was that diminutives in German always have neuter gender. This implies that *-chen* has (at least) a gender feature, specified for neuter, as part of its lexical entry (cf. Baker and Bobaljik 2002: ch. 2, 49). Since, as I have argued, *-chen* is an exponent of the head of UnitP, this phrase will be neuter, and higher agreeing material (articles, adjectives) will exhibit neuter agreement.

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[39]I thus take the semantic contribution of the diminutive morpheme to be fully regular and semantically transparent (cf. Ackema and Neeleman 2004: 85), although pragmatic factors may interfere and cases of lexicalization cannot be excluded.

(66)

```
                    UnitP
                    [+unit]
                    [+neut]
                   /        \
                  /          \
              (nP)          Unit′
                            [+unit]
                            [+neut]
                           /       \
                          /         \
                      Unit          NumP
                       |           /     \
      ⎧   -chen    ⎫  Num       (nP)
      ⎨ Stück, Flasche, … ⎬  [+count]
      ⎩           ⎭   [±pl]
         [+unit]
         [+neut]
```

In German numeral-classifier constructions, gender is likewise determined by the numeral classifier, not by the head noun (cf. *der Wein* 'the.MASC wine' vs. *die Flasche Wein* 'the.FEM bottle of wine'/*die Weinflasche* 'the.FEM wine bottle', *das Weinchen* 'the.NEUT wine.DIM'). This is exactly what we expect under the present analysis, which – as shown in (66) – analyzes diminutive morphemes and numeral-classifier morphemes as essentially of the same type, the only difference being that the former happens to be clitic-like. Both elements bear a gender feature and head a phrase (UnitP); the "projecting" property of the diminutive morpheme is thus naturally accounted for under the unified analysis developed here.

Not surprisingly, there is crosslinguistic variation in the feature content of the diminutive morpheme. While Dutch and Greek are like German in that gender is determined by the diminutive morpheme (Dressler and Barbaresi 1994: 104), other languages like Russian (Beard 1998: 51) and Italian (Baker and Bobaljik 2002: 54f.) retain the gender feature that is inherent to the stem.[40] This follows if the morpheme in Italian/Russian does not have a gender feature (or any φ-features at all, as proposed by Baker and Bobaljik 2002: ch. 2, 49), which consequently does not percolate up to UnitP; higher material probing for φ-features will thus first find the one on the stem. Depending on the empirical facts, it may of course be the case that in many languages the diminutive morpheme is not classifier-like at all, hence the exponent of an altogether different functional head, which may be adjoined to the root projection (Wiltschko 2005, Wiltschko and Steriopolo 2007).

Returning to German, it was already remarked in §3.2 above that it is the diminutive morpheme, not the base noun, that determines exponence of number morphology (plural marking). In Austrian German, the plural marker on diminutivized nouns is always *-n*, whereas it varies depending on the noun when not diminutivized; the same is true for Low Rhenish dialects of German, where the plural marker for diminutives is uniformly *-s* (30). Wiltschko (2005) takes this to suggest that the diminutive suffix is actually the projecting member of an *n*+N compound. On my account, determination of the plural marker (a case of secondary exponence) follows straightforwardly from the unidirectional c-command relation holding between Unit and Num (recall the hierarchy in (28)). We can state this in linear terms as a context-sensitive insertion rule:

(67) a. Num$_{[+pl]}$ $\leftrightarrow$ $\varnothing$ / chen __ (Standard German)
      b. Num$_{[+pl]}$ $\leftrightarrow$ -s / ke __ (Low Rhenish)

Notice that, as already remarked on p. 12 above, there is only one Num-head in all numeral-classifier constructions. This accounts directly for the fact that number is always realized only once, as part of the resulting "word":

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[40]See Wiltschko and Steriopolo (2007) for some relevant typological discussion, set aside here.

(68) a. ein Wässer-ke-n   (Low Rhenish)
     a   water-DIM-SG

   b. zwei Wässer-ke-s
      two   water-DIM-PL

(69)
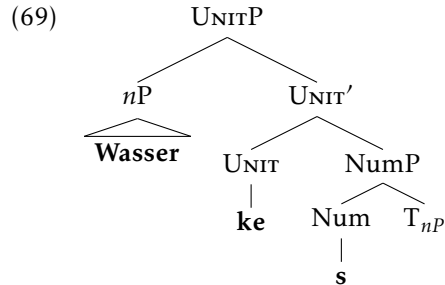
Notice also that number is correctly predicted to occur outside of the diminutive marker. I will now turn to a class of exceptional cases that seemingly contradict this observation.

3.3.2   The *Kinderchen* exception

Stump (1993: 21) and Wiese (1996b: 147) mention the curious case of *Kind-er-chen* 'child-PL-DIM', which seems to show number morphology inside the diminutive marker, which is obviously not predicted by the structure in (30b) (and, of course, generally unexpected under standard assumptions concerning the order of inflectional and derivational morphology).[41] Further examples of this kind include *Bild-er-chen* 'picture-PL-DIM', *Blätt-er-chen* 'sheet-PL-DIM', *Eierchen* 'egg-PL-DIM' and *Lied-er-chen* 'song-PL-DIM'.

Importantly, "*Kinderchen* cases" arise only with *-er* plurals, never with any other plural allomorph (Donalies 2006: 42): **Tier-e-chen* 'animal-PL-DIM', **Nase-n-chen* 'nose-PL-DIM', **Park-s-chen* 'park-PL-DIM', etc. It must be noted that *Kinderchen* cases do not represent a productive class; as noted by Dressler and Barbaresi (1994: 109) the plural-inside-diminutive pattern is unproductive and recessive in present-day German.[42]

Siddiqi (2009: chap. 5) proposes some changes of standard assumptions in Distributed Morphology that are helpful here. In particular, Siddiqi challenges the assumption that an irregular plural form like *mice* is derived from the inserted vocabulary item *mouse* by means of readjustment rules in the context of a functional Num head with the feature [+pl]. Siddiqi proposes to eliminate readjustment rules and instead assume that *mouse* and *mice* exist as independent vocabulary items, competing for insertion. He argues (2009: chap. 7) that this revision sheds light on compounds in which one member shows (irregular) inflection: compare *feet-first* vs. **heads-first*, *lice-infested* vs. **rats-infested*, *mice lover* vs. **dogs lover*, etc. (Kiparsky 1982, Sproat 1985). Siddiqi accounts for these cases by assuming that the relevant roots can be specified for [+pl], in which case they allow for the insertion of vocabulary items *feet*, *lice* and *mice*.[43]

Notice now that *-er*-plurals in German behave similarly with regard to compounding, i.e. they show inflection inside compounds: *[[Kind-er]-fresser]* 'child-PL-eater', *[[Bild-er]-macher]* 'picture-PL-maker', *Blätt-er-stapel* 'sheet-PL-pile', etc.

I propose to account for the *Kinderchen* exception in a way that builds on Siddiqi's proposal: a small class of roots (see note 42) have counterparts that are inherently specified for [+pl]; these roots allow for direct insertion of vocabulary items such as *Kinder* (yielding cases like *Kinderchen*

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[41]This seems to be more generally the case in Slave (Northern Athapaskan); see Rice (1998: 655). I do not know if the solution proposed below readily extends to the facts of this language.

[42]Thus, not all nouns which take *-er*-plural allow for the *Kinderchen*-type diminutive (e.g. **zwei Bücherchen* vs. *zwei Büchlein* 'two book.PL.DIM', **zwei Wälderchen* vs. *zwei Wäldchen* 'two forest.PL.DIM').

[43]I am glossing over some technical details of Siddiqi's proposal which are not directly relevant for our purposes.

and *Kinderfresser*; see (70)). Strong evidence for this analysis comes from dialectal German, where *Kinderchen* cases can be overtly number-marked: Dressler and Barbaresi (1994) provide the example *Kind-er-chen-s*; in Low Rhenish, *Kind-er-ke-s* is fine, just like *kind-er-tje-s* in Dutch (Nieuwenhuis 1985: 283); see the gloss in (71a). The structure for the first case is then as shown in (71b):

(70) $\sqrt{\text{KIND}}_{[+pl]} \leftrightarrow \text{Kinder}$

(71) a. Kind-er-chen-s
          child-PL-DIM-PL

      b.
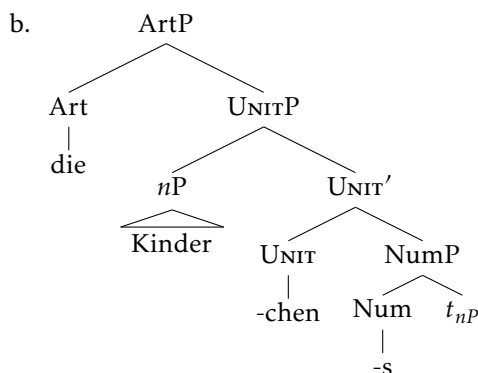
3.3.3 Two types of *-chen*

Let us now briefly turn to a further property of diminutive-formation, umlauting. The term *umlaut* designates fronting of back stem vowels, typically on the final full (non-schwa) vowel (Wiese 1996a: 122). A well-known fact about umlaut is that in German, some suffixes trigger umlaut in the stem whereas others do not. Wurzel (1970) characterized the diminutive as one of the 'umlaut-conditioning' environments; some examples for umlauting in diminutives are given below:[44]

(72) a. Wald → W**ä**ld.chen (/a/ → /ɛ/)
          forrest   forrest.DIM

      b. Schloss → Schl**ö**ss.chen (/o/ → /ø/)
          palace   palace.DIM

      c. Turm → T**ü**rm.chen (/u/ → /y/)
          tower   tower.DIM

      d. Maus → M**ä**us.chen (/au/ → /oy/)
          mouse   mouse.DIM

The Standard German diminutive morphemes *-chen* and *-lein* and their dialectal variants consistently trigger Umlaut on the stem they combine with (cf. Wiese 1996a: 119).[45] In other words, whatever it is about the diminutive morpheme that triggers umlauting, it never fails to apply. In this connection, Wiese (1996a: 133) points out that speakers consistently apply umlauting in ad-hoc diminutive formations (see also Donalies 2006: 43):[46]

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[44]If the stem has an underlying front vowel, umlauting does not apply (e.g. *Kind* 'child' → *Kindchen* 'child.DIM').

[45]Wiese actually claims this to be true only for *-lein*, due to the fact that there are forms involving *-chen* without umlaut in the stem. As will be shown below, however, this is actually a different (non-diminutive) use of the same morpheme.

[46]The same is true in my own dialect (Low Rhenish) and in Limburgian Dutch (Hermans and van Oostendorp 2008).

Cases of ineffability provide further support for my claim that umlauting in true diminutives is consistent. As Fanselow and Féry (2002) show, ineffability arises whenever stress is nonfinal in the stem (cf. also Hermans and van Oostendorp 2008).

(73) a. Natiönchen 'nation.DIM'
      b. Progrämmchen 'program.DIM'
      c. Visiönchen 'vision.DIM'
      d. Pathöschen 'pathos.DIM'

A *prima facie* problem for the claim that umlauting in diminutive formation is fully regular is that there exist (what look like) diminutives which show no umlaut. This is the purely hypocoristic (or "endearment-conveying") use of *-chen*; some examples are given below:

(74) a. Kurtchen 'Kurt.HYP' (proper name)
      b. Tantchen 'aunt.HYP'
      c. Hundchen 'dog.HYP'

What seems to be particularly puzzling about these non-umlauted forms is that they can co-exist, in free variation, with umlauted forms (compare (74c) to *Hündchen* 'dog.DIM').

I argue that the purely hypocoristic use of *-chen* is not true diminution, and that non-umlauting *-chen* is not an exponent of Unit, but of a different functional category (cf. Iverson and Salmons 1992: 142). The non-umlauting *-chen* acts as a kind of name-marker (cf. Jurafsky 1996: 563), conveying endearment. A relevant consequence is that it cannot be combined with inanimate (mass) nouns like *Wasser* 'water' or *Holz* 'wood' (*Wasserchen, *Holzchen), i.e. it cannot act as a classifier. Taking non-umlauting, hypocoristic *-chen* to be a nominalizing head (or, perhaps, suffixal noun classifier) also explains why it – but not umlauting, true diminutive *-chen* – can derive nouns from adjectival bases (cf. Dressler and Barbaresi 1994: 105):[47]

(75) a. Dumm$_A$chen 'stupid.HYP$_N$'
      b. Blond$_A$chen 'blonde.HYP$_N$'

The meaning of cases like those in (75) and (74) shows no sign of diminution (here understood as specified above, involving the features [+unit], [+small]); they are just names (cf. Donalies 2006: 41, fn. 9). I take this to suggest that umlauting, classifying *-chen* non-umlauting, hypocoristic *-chen* are featurally distinct but homophonous morphemes. We can thus assume that *-chen* acting as a numeral classifier consistently triggers umlaut on the stem that it combines with.[48]

There is no consensus as to the grammatical mechanism that gives rise umlaut (see Wiese 1996a and refernces cited). Given the consistency of umlaut in true diminutives, we may assume that German has a readjustment rule (V → [+front]) that is specified to apply in this environment, yielding the observed root allomorphy (cf. Embick and Halle 2005). Alternatively, umlaut in diminutives can be taken to be a phonological spreading rule. In this case, classifying *-chen* bears a floating [+front]-feature which is associated with the stem vowel, made possible either by previous delinking of the stem vowel's [-front]-feature or underspecification of the vowel. This kind of implementation is suggested by Wiese (1996a: 133) for German and Hermans and van Oostendorp (2008) for Limburgian Dutch. Since the issue is not directly relevant to the focus of this paper, I will set it aside.

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[47]Nevertheless, it is clearly no accident that diminutive/classifying *-chen* and hypocoristic *-chen* are homophonous. As pointed out to me by Andrew Nevins, it seems to be the case crosslinguistically that the same morpheme is used for diminutive formation and affectionate name-markers. At the same time, it does not seem to be rare for languages to distinguish between the two uses grammatically. To give but one example, Muravyova (1998: 536) mentions that in Chukchee, the diminutive affix (*qej*) can act either as a prefix or as a suffix. In its suffixal use, it is a regular diminutive (*meməl-qej* 'little seal'), whereas the prefixal form is used to name young animals (*qej-umqə* 'bear cub'). The latter, hypocoristic use presumably corresponds to non-umlauting *-chen* in German. Notice that in this case, diminutive and hypocoristic use of the same morpheme clearly involve distinct functional heads (one suffixal, the other prefixal). The deeper question *why* morphemes marking diminution and endearment/affection are often identical in form must be left for future research.

[48]Fanselow and Féry agree with this conclusion and formulate it as a constraint that rules out non-application of umlauting as a repair for ineffability (their "Faith(front)"; cf. Fanselow and Féry 2002: 281 and note **??**). It seems to me that all cases which are typically cited to show the purported idiosyncrasy of umlaut (such as *Onkel* 'uncle' → *Onkelchen*, *Önkelchen are proper-name-like, hence are cases that allow for hypocoristic, name-marker *-chen* only.

To summarize this section briefly, I have argued that the diminutive morpheme has the features [+unit] (accounting for its classifying function at the semantic interface) and [+small]; the descriptive content of the morpheme thus makes it semi-lexical. Other numeral classifiers share the specification [+unit] but differ in their descriptive content. I have also argued that both *-chen* and other numeral classifiers project their φ-features (gender) simply by heading UnitP, yielding the well-known 'base-alternating' properties of the diminutive morpheme. Related to this, I have argued that the numeral classifier in all cases regulates exponence of Num, thus accounting for another projecting property of *-chen*; this case, however, involves licensing under c-command. Finally, I have argued that the diminutive morpheme relevant to this paper and the homophonous name-marker must be sharply distinguished. In particular, I argued that the former but not the latter individuates and triggers umlaut.

4   Conclusion

In this paper, I investigated the interplay of diminution and numeral classification with mass nouns. Based on the observation that both diminutive formation and numeral-classifier insertion have a dividing function (giving rise to unit-count interpretations; §2), I argued that both types of morphemes should be seen as exponents of the same functional head, Unit. Following a brief discussion of a previous approach in this spirit, I argued in section §3 that the striking parallelism between the diminutive morpheme and numeral classifiers can be fruitfully pursued in a framework that rejects a principled distinction between "words" and "phrases" and, moreover, assumes the specific noun-phrase decomposition proposed by Svenonius (2008).

Implementing this idea in §3.2, I showed that the system allows for a straightforward derivation of the tripartite pattern of unit-count readings in German. Following ideas in Wiltschko 2005, I argued that the role difference between a diminutive and a numeral-classifier construction is that the former involves an additional movement step:

(76)   a. zwei Flaschen Wein
            two bottle.PL wine

       b. zwei -chen Wein → zwei Wein$_i$-chen t_i
            two DIM wine   two wine-DIM

Following remarks of Blühdorn's (2006), I then argued that compounds involving numeral classifiers should also be derivable in this system. I argued that while movement of *n*P to Spec-Unit was obligatory in (76b), it is non-obligatory but possible in (76a). Optional *n*P raising then gives the corresponding compound structure, crucially being unit-count:

(77)   zwei Flaschen Wein → zwei Wein$_i$-Flaschen
        two bottle.PL wine   two wine-bottle.PL

The system thus predicts the existence of three numeral-classifier strategies in German, giving rise to unit-count readings: the 'analytic' numeral-classifier construction (76a), diminutive formation (76b), and compounding (77). In a way, the main proposal in this paper was that, given the right ingredients, the observations made by de Belder (2008), Wiltschko (2005) and Blühdorn (2006) can be synthesized into a coherent, unified analysis.

Beyond this conceptually attractive result, I also showed that the account makes empirical predictions concerning diminutive morphology. I will briefly summarize these predictions and the relevant observations:

1. Numeral classifiers cannot be combined with diminutivized nouns, since this would require the presence of two Unit-heads in the structure:

(78) * zwei Glas Bierchen
      two   glass beer.DIM

2. By contrast, numeral classifiers can be diminutivized themselves, in which case the numeral classifier acts (semantically and syntactically) as a modifier of the Unit-head:

(79) zwei Stückchen Holz
      two   piece.DIM wood

3. Since Spec-Unit remains vacant in (79), it is correctly predicted that nP can (but need not) raise, like in (77) above:

(80) zwei Holz$_i$-Stückchen
      two   wood.piece.DIM

4. By contrast, it is correctly predicted that diminutives can never be lefthand members of a numeral-classifier compound (or, in fact, any other compound), since such a structure cannot be derived:

(81) * ein Hölzchenstück
      a   wood.DIM.piece.DIM

5. Finally, I suggested that *bisschen*, which has the modified-classifier structure of (79) nevertheless bans nP-raising to its Spec due to the obligatory absence of NumP and the anti-locality of movement:

(82) a.   ein [$_{\text{Unit}P}$ biss chen-Unit [$_{n\text{P}}$ Holz]]
            a   bit DIM   wood

      b.   * ein [$_{\text{Unit}P}$ [$_{n\text{P}}$ Holz] biss chen-Unit $t_{n\text{P}}$] $\Rightarrow$ violates (52)
            a   wood   bit DIM

In §3.2.2, I argued that the motivation for obligatory movement in diminutive-formation (as shown in (76b)) is phonological deficiency of the diminutive morpheme. Contrary to what is claimed in the literature, I argued that the diminutive morpheme is not a phonological word, but very much like a clitic, hence in need of a host. This is what drives syntactic nP-raising to Spec-Unit while also accounting for its optionality it when a modifier is present (as in (80)). All arguments for the ω-status of *-chen* were shown to be flawed. It thus turns out that the diminutive "suffix" is in fact morphophonologically quite different from genuine (CV-intial) derivational suffixes in German: it is, in fact, not a suffix, but a semi-lexical classifier head which happens to be phonologically deficient.

Finally, I argued in §3.3.1 that both diminutive morpheme and regular numeral classifiers are semi-lexical nouns, bearing a gender feature as well as semantic features indentifying them as instructing UNIT concepts (classifiers). Both of these properties follow directly from the analysis, according to which all numeral classifiers head UnitP, which (obligatorily or optionally) hosts the head noun in its Spec. Moreover, both diminutive and numeral classifier were argued to license exponence of Num, accounting for the fact that plural is expressed only once within a classified-noun phrase (setting aside the exceptional case discussed in §3.3.2), with allomorph selection according to idiosyncratic properties of the numeral classifier. In §3.3.3, I argued that hypocoristic *-chen* should be analyzed as a different (homophonous) morpheme.

In conclusion, my aim in this paper was to show that a unified analysis of German numeral-classifier constructions – including diminutives – is feasible and, moreover, supported by empirical facts. While many details have been set aside during the discussion, it seems to me that this paper provides a promising starting point for further investigations into the nature of the diminutive, and more generally some (admittedly tentative) support for the idea that the line between "words" and other syntactic objects may not be a property of grammar, but rather an artifact of linguistic analysis.

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