

## The morpho-phonology of an English diminutive

Colin P. B. Davis\*

**Abstract.** I describe and analyze the morpho-phonology of the English diminutive suffix /-i/, as in *doggy*, *birdie*, *horsie*, and so on. My first goal is to argue that unlike most other diminutives in English this suffix is productive, though subject to a phonological constraint. Specifically, I show that this suffix must be adjacent to a stressed syllable—a requirement that motivates exceptional truncations. I propose that these facts provide a clear instance of a morpheme-specific phonological constraint. My second goal is to examine how this diminutive interacts with nouns that normally have irregular plural forms. I show that this diminutive can block irregular plural morphology, but optionally allows the persistence of plural umlaut. I explain these facts using an analysis in which morphological rules require adjacency between the triggering node and the affected one, along with a proposal that the English diminutive /-i/ is an adjunct/modifier which can be attached late in the derivation.

**Keywords.** English; diminutive; phonology; stress; morphology; irregular plurals

**1. Introduction.** In this paper, I describe and analyze the morphophonology of the English diminutive suffix /-i/. This morpheme's orthographic form is variable, but it is generally written as *-(e)y* or *-ie*, as (1) below shows:

- (1) *The diminutive*
- a. Look at the cute **doggy**.
  - b. Some **birdies** live in this tree.
  - c. There's a little **fishie** in the pond.

This diminutive is common in colloquial and child-directed speech. It is usable with both animate and inanimate nouns, as well as names, and encodes that the noun in question is small and/or endearing. We most often find this diminutive used with mono-syllabic nouns:

- (2) *Diminutive of mono-syllabic nouns*
- a. horse → horsie
  - b. sheep → sheepie
  - c. foot → footie
  - d. snack → snackie
  - e. house → housie
  - f. bed → beddie
  - g. Ann → Annie
  - h. Jim → Jimmy

---

\* The data reported in this paper is the aggregate of judgments gathered from conversations with 11 native English speakers, including American, Australian, and British dialects. The IPA transcriptions here reflect the author's rhotic dialect, but the generalizations reported here also apply to non-rhotic dialects. Thanks to feedback from Eualia Bonet, Canaan Breis, Noam Faust, Romi Hill, Jane Lorenzen, Max Papillon, Nate Shaftoe, Soren Tebay, Xico Torres, Christian Uffan, George Walkden, as well as audiences at the 29th Manchester Phonology Meeting and the 98th Linguistic Society of America meeting.

Author: Colin P. B. Davis, University of Konstanz ([colin.davis@uni-konstanz.de](mailto:colin.davis@uni-konstanz.de)).

English has various other diminutive morphemes which are not fully productive. For an overview see Schneider (2003), and chapter 19 of Huddleston & Pullum (2002).

(3) *Some un- or semi-productive diminutives*

- a. *-(l)et(te)*  
droplet, piglet, cigarette
- b. *-ling*  
gosling, seedling, darling

The first goal of this paper is to argue that diminutive /-i/ is fully productive, though phonologically constrained in a consistent way. As we will see, this diminutive obeys the descriptive generalization in (4):

(4) *Generalization about diminutive /-i/*

The diminutive suffix /-i/ is always right-adjacent to a stressed syllable.

Using Optimality Theory (Prince & Smolensky 2004), I argue that diminutive /-i/ obeys an alignment constraint (McCarthy & Prince 1993, 1998) of the following form:

(5) ALIGN('σ-DIM)

Assign a \* if the syllable to the left of diminutive /-i/ is not stressed.

I will show that this constraint sometimes motivates truncation of the noun in order to enforce stress-adjacency, as previewed in (6):

(6) *Diminutive truncation*

- a. blanket → blankie
- b. chipmunk → chippie
- c. vegetable → veggie

Such truncation is mentioned though not analyzed in depth by Schneider (2003), who describes some basic facts about the distribution and productivity of diminutive /-i/. As far as I know this phenomenon has not otherwise been examined in detail.<sup>1</sup>

I go on to show that the adjectival suffix /-i/ as in *stinky*, *chunky*, and so on, which is homophonous with the diminutive, is not subject to the above constraint. This fact makes it clear that this constraint really must be morpheme-specific (Pater 2000, 2009): while the constraint mandates a phonological requirement, the enforcement of that requirement must be sensitive to a morphological distinction that is separate from pure phonology, since diminutive /-i/ and adjectival /-i/ are homophones. It is unclear how such constraints could be enforced if phonology were blind to morphological facts. This finding thus fits with theories in which phonology and morphology function in tandem at least in part (Wolf 2008, 2009; Pertsova 2015; Davis 2019).

Establishing the phonological properties of this diminutive sets the stage for the second main goal of this paper: to examine the diminutive's morphological effects in nouns that show an irregular vowel shift in the plural—*umlaut*, as in *mouse* → *mice*. While *umlaut* as well as omission of

---

<sup>1</sup> See also Lappe (2002) for some discussion of /-i/ in truncated names, which she terms a “hypocoristic”, though her focus is primarily on bare truncated names.

the usual plural suffix *-(e)s* is normally obligatory for the plurals of such nouns (7a-b), interestingly, use of the diminutive restores the plural *-(e)s* and optionally permits umlaut (7c-d):

(7) *Diminutive interaction with irregular plural nouns*

- a. one mouse
- b. two mice / \*two mouses
- c. one mousie
- d. two **micies** / two **mousies**

My analysis of this pattern relies on a proposal about the derivational timing of the diminutive's addition. Previous works have argued that diminutives may be modifier elements, analogous to adjunct phrases in syntax (see Gouskova & Bobaljik (2022) and references therein). Furthermore, research in syntax and semantics has argued that adjuncts/modifiers can be introduced into the derivation late, after some delay (Lebeaux 1991; Sauerland 1998, a.o.). I argue that the patterns in (7) above emerge from the possibility of late-merger of the diminutive, in combination with two proposals that are widely-adopted in morpho-syntactic research: that morphological rules like allomorphy/suppletion have an adjacency requirement (Embick 2010; Bobaljik 2012; Bobaljik & Harley 2017), and that the assignment of morpho-phonological information to a structure proceeds bottom-up (Embick 2010; Bobaljik 2000, 2012).

1.1. CONTENT OF THE PAPER. Next, section 2 describes the phonological facts about the diminutive and the truncation it sometimes causes. Section 3 provides an Optimality-Theoretic analysis of those facts. Section 4 describes and analyzes situations in which the diminutive blocks the appearance of irregular plural morphology, including umlaut. Section 5 then provides an account for patterns where the diminutive's presence does not bleed umlaut. Section 6 concludes.

**2. The diminutive must be stress-adjacent.** In this section I will provide evidence for the empirical generalization introduced above:

(8) *Generalization about diminutive /-i/*

The diminutive suffix */-i/* is always right-adjacent to a stressed syllable.

Since mono-syllabic nouns are inherently stressed, it is no surprise that the diminutive is compatible with such nouns, as we have already seen:

(9) *Compatibility with mono-syllabic nouns*

- a. tooth → toothie
- b. cup → cuppy
- c. boot → bootie
- d. snake → snakey

Multi-syllabic nouns with final stress are not especially common in English, but these are generally compatible with the diminutive (10):<sup>2</sup>

<sup>2</sup> Schneider (2003) states that forms using diminutive */-i/* are always bisyllabic, forming a trochaic prosodic foot. I argue that this is not strictly so. Speakers sometimes report that diminutives of multi-syllabic nouns like those in (10) are less ideal than those built from mono-syllabic nouns as in (9). However, such forms are by no means outright unacceptable, so it does not seem that there is an absolute requirement for a diminutive form to be a trochaic foot. Nevertheless, there may be a preference for trochaic diminutives: see Kempe et al. (2005) for discussion of the po-

(10) *Compatibility with multi-syllabic nouns with final stress*

- a. giraffe ([ʤɪ.'ɪæf]) → giraffie
- b. raccoon ([ɹæ.'kʊn]) → racoonie
- c. baboon ([bæ.'bʊn]) → baboonie
- d. gazelle ([gə.'zɛl]) → gazellie
- e. tangerine ([tæ.n.ʤə.'ɪn]) → tangeriney
- f. croissant ([kɹə.'sɑnt]) → croissantie
- g. magazine ([mæ.gə.'zɪn]) → magaziney

In contrast, it is clear that the diminutive is incompatible with nouns that do not end in a stressed syllable:

(11) *Incompatibility with non-final-stress nouns*

- a. elephant ([ˈɛ.lə.fɪnt]) → \*elephantie
- b. ostrich ([ˈɑ.stɹɪʃ]) → \*ostrichie
- c. parrot ([ˈpɛ.ɹɒt]) → \*parrotie
- d. turtle ([ˈtɪ.təl]) → \*turtlie
- e. badger ([ˈbæ.ʤɪ]) → \*badgerie
- f. hamster ([ˈhæm.stɪ]) → \*hamsterie
- g. vegetable ([ˈvɛʤ.tə.bl]) → \*vegetableie
- h. blanket ([ˈblɛŋ.kɪt]) → \*blanketie
- i. chipmunk ([ˈtʃɪp.məŋk]) → \*chipmunkie
- j. computer ([kəm.'pjʊ.tɪ]) → \*computerie
- k. finger ([ˈfɪŋ.gɪ]) → \*fingerie

Importantly, however, it is possible to successfully produce diminutives of such nouns by deleting material intervening between a stressed syllable and the diminutive suffix:

(12) *Stress-adjacency satisfied by truncation*

- a. hamster → \*hamsterie / ✓ hammie
- b. chipmunk → \*chipmunkie / ✓ chippie
- c. elephant → \*elephantie / ✓ ?ellie
- d. computer → \*computerie / ✓ computie
- e. vegetable → \*vegetableie / ✓ veggie
- f. blanket → \*blanketie / ✓ blankie
- g. finger → \*fingerie / ✓ fingie

As I discuss in section 3.1, the starred diminutive forms in (11) and (12) above are possible as adjectival forms, which can confound their judgment when in isolation. However, when placed in a context that makes the intended diminutive interpretation unambiguous, the contrasts just described emerge clearly:

---

tential connection between diminutives, trochaic stress, and child-directed speech. This preference can be modeled as an Optimality Theoretic constraint which is trivially satisfied in examples like (9), but violated in (10), due to not being ranked such that it can force deletion. This contrasts with the stress adjacency requirement of the diminutive that I posit in this paper, which does force deletion in certain forms like (12), as I discuss explicitly in section 3.

- (13) *Possible versus impossible diminutives in context*
- a. I bought my kitten a new \*blanketie / ✓ blankie.
  - b. The baby does not want to eat \*vegetablies / ✓ veggies.
  - c. There's a little \*chipmunkie / ✓ chippie in the backyard.

These facts serve to demonstrate the generalization that I introduced above, repeated in (14). I provide an analysis of this generalization in the next section.

- (14) *Generalization about diminutive /-i/*  
 The diminutive suffix /-i/ is always right-adjacent to a stressed syllable.

**3. An Optimality-Theoretic analysis.** I use the above empirical generalization as a justification for positing the following Optimality-Theoretic constraint:

- (15) ALIGN( $\sigma$ -DIM)  
 Assign a \* if the syllable to the left of diminutive /-i/ is not stressed.

Since ALIGN( $\sigma$ -DIM) is obeyed in all attested forms, it is necessary to assume that this constraint is not outranked by any others. In situations where the noun that the diminutive would affix to ends in a stressed syllable, ALIGN( $\sigma$ -DIM) is trivially satisfied. Since truncation can make the diminutive suffix adjacent to a stressed syllable, we must rank ALIGN( $\sigma$ -DIM) over the constraint that would penalize deletion:

- (16) MAX-IO  
 Assign a \* for every segment in the input that is absent from the output.

The prediction of this ranking is illustrated with several examples in (17) below. In each of the tables in (17), the faithful candidate loses to the one that violates MAX-IO by deleting segments to ensure satisfaction of the dominant constraint ALIGN( $\sigma$ -DIM). Note that since the diminutive's underlying form is /-i/, any final consonant in the noun is syllabified as the onset of the syllable containing the diminutive suffix, given the preference for onsets over codas.<sup>3</sup>

<sup>3</sup> This diminutive suffix may have a phonologically conditioned allomorph /-zi/, which is only found with nouns that end in vowels, perhaps including glides (p.c. Jane Lorenzen). Interestingly, this version of the diminutive only seems to be possible in plural contexts (i). While it is tempting to speculate that the additional /z/ here is actually a doubled exponent of plurality, it is also possible to simply state that plurality is a part of the licensing context for the diminutive allomorph /-zi/.


- (i)
- a. toe → two toesies / \* one toesie
  - b. bow → two bowsies / \* one bowsie
  - c. fly → two fliesies / \* one fliesie
  - d. shoe → two shoesies / \* one shoesie

Notice that all diminutives shown until now in this paper are in fact built from consonant-final nouns. When we set aside the above complication about plurality by examining singular nouns, we find that diminutives of nouns ending in vowels/glides are often somewhat degraded:


- (ii)
- a. shoe → a cute <sup>?</sup>shoie
  - b. cow → a cute <sup>?</sup>cowie
  - c. bow → a cute <sup>?</sup>bowie
  - d. toe → a cute <sup>??</sup>toey

(17) *Truncation to ensure stress-adjacency*


a. *blanket* → *blankie*

	/bleŋkɪt/ + /i/	ALIGN('σ-DIM)	MAX-IO
1.	'bleŋ.kɪ.ti	*	
2. 	'bleŋ.ki		**

b. *chipmunk* → *chippie*

	/tʃɪpməŋk/ + /i/	ALIGN('σ-DIM)	MAX-IO
1.	'tʃɪp.məŋ.ki	*	
2. 	'tʃɪ.pi		****

c. *vegetable* → *veggie*

	/vɛdʒtəbl/ + /i/	ALIGN('σ-DIM)	MAX-IO
1.	'vɛdʒ.tə.bli	*	
2. 	'vɛ.dʒi		****

While there are certainly other losing candidates we might consider, which will require the addition of other constraints, what has been shown above is sufficient to make my point—that the diminutive /-i/ is subject to a particular alignment constraint.<sup>4</sup>

3.1. THE ALIGNMENT CONSTRAINT IS MORPHEME-SPECIFIC. Contrasting the properties of diminutive /-i/ with the homophonous adjectival suffix makes it clear that ALIGN('σ-DIM) must really be specific to the diminutive. Thus what we are dealing with here cannot be a general phonological constraint on suffixes of the form /-i/. This is evident because the homophonous adjectival suffix need not be stress-adjacent, as shown in (18) below:

(18) *Align('σ-DIM) not relevant for homophonous adjectival suffix*

- a. Drinking water with your nose is a very **elephanty** thing to do.
- b. John hasn't cleaned his hamster's cage, so his room has a **hamstery** smell.
- c. I don't understand **computery** stuff like hard drives and floppy disks.

The bolded words above are homophonous with some of the failed diminutive forms in (11) above, which are unacceptable due to not satisfying Align('σ-DIM), as shown once again below:

- e. fly → a cute ?\*flyie

The relative awkwardness of these examples is likely due to the presence of hiatus.

<sup>4</sup>For example, we should consider the possibility of shifting the noun's stress to the syllable preceding the diminutive. This would yield unattested forms like \*[bleŋ.'kɪ.ti]. This indicates that ALIGN('σ-DIM) does not outrank the constraints that are responsible for determining stress in English, whatever those may be. Since stress is often lexically determined in English, we might consider stress a part of the underlying form of lexical roots, which is preserved by a high-ranking faithfulness constraint like IDENT-IO(STRESS).

Another unattested possibility would be the epenthesis of a stressed vowel in order to satisfy ALIGN('σ-DIM). This can be ruled out with a markedness constraint DEP-IO('V). Since such a process is in general absent from English it is difficult to construct a relevant diminutive example with such epenthesis that is anywhere near plausible.

(19) *Diminutive incompatibility with non-final-stress nouns*

- a. elephant ([ˈɛ.lə.fɪnt]) → \*elephantie
- b. hamster ([ˈhæm.stɪ]) → \*hamsterie
- c. computer ([kəm.ˈpjʊ.tɪ]) → \*computerie

This comparison allows us to see that Align( $\sigma$ -DIM) is specifically applicable to the diminutive morpheme. Morpheme-specific phonological constraints of this sort have precedent (Pater 2000, 2009), and this case study from English provides an especially clear instance of one. We expect to find such constraints if phonology and morphology function simultaneously, or at least overlap to some extent (Wolf 2008, 2009; Pertsova 2015; Davis 2019). In contrast, if phonology and morphology were completely independent, it is unclear how constraints of this sort could be enforced by the grammar.

In the remainder of this paper, I will discuss the behavior of the diminutive in plural nouns. This will require us to examine the way that the morpho-syntax of diminutive nouns affects their resulting phonological forms.

**4. Diminutives and irregular plural blocking.** With nouns that use regular plural morphology, we can clearly see that the diminutive sits between the noun and the plural suffix (20). The same is true in the Slavic languages, for instance (Moskal 2015), where diminutives are very frequent.

(20) *Diminutive with regular plurals*

- a. dogs → dogg-ie-s
- b. pigs → pigg-ie-s
- c. birds → bird-ie-s
- d. fish → fish-ie-s

English also has nouns which are morphologically irregular in the plural. The diminutive has a complex interaction with these. The irregular nouns relevant here do not use the usual plural suffix  $-(e)s$ , but instead either replace it with an alternative suffix (21a-b) or simply omit it (21c-h). Among the nouns that omit the plural suffix, several of them undergo umlaut—a vowel alternation in the noun itself (21c-g). These irregularities are normally obligatory, as we see below:

(21) *Irregular plurals*

- |    |                                     |                               |
|----|-------------------------------------|-------------------------------|
| a. | one ox / two ox-en (*oxes)          | [Alternative plural suffix]   |
| b. | one child / two child-ren (*childs) | [Alternative plural suffix]   |
| c. | one mouse / two mice (*mouses)      | [Umlaut, no plural suffix]    |
| d. | one louse / two lice (*louses)      | [Umlaut, no plural suffix]    |
| e. | one goose / two geese (*gooses)     | [Umlaut, no plural suffix]    |
| f. | one tooth / two teeth (*tooths)     | [Umlaut, no plural suffix]    |
| g. | one foot / two feet (*foots)        | [Umlaut, no plural suffix]    |
| h. | one sheep / two sheep (*sheeps)     | [No umlaut, no plural suffix] |

Importantly, the inclusion of the diminutive suffix in such nouns can block irregular plural morphology. In this case, we see the umlaut-less form of the noun, and use of the default plural suffix  $-(e)s$ , as in (22) below. (In section 1, I previewed that there is also another way that the diminutive can interact with irregular plural nouns, but I will set this aside until the next section.)

(22) *The diminutive blocks irregular plural morphology*

- a. ox-en → ✓ ox-ie-s / \*ox-ie-en
- b. mice-∅<sub>PL</sub> → ✓ mous-ie-s / \*mice-ie-∅<sub>PL</sub>
- c. geese-∅<sub>PL</sub> → ✓ goos-ie-s / \*geese-ie-∅<sub>PL</sub>
- d. feet-∅<sub>PL</sub> → ✓ foot-ie-s / \*feet-ie-∅<sub>PL</sub>
- e. teeth-∅<sub>PL</sub> → ✓ tooth-ie-s / \*teeth-ie-∅<sub>PL</sub>
- f. sheep-∅<sub>PL</sub> → ✓ sheep-ie-s / \*sheep-ie-∅<sub>PL</sub>

In order to analyze this pattern (and the related one in the next section), I adopt Distributed Morphology (Halle & Marantz 1993; Harley & Noyer 1999). In this theory, a syntactic structure is first built, after which the underlying phonological form of its terminal nodes is assigned. The rules that achieve this are called Vocabulary Insertion (VI) rules, which define a mapping between syntactic nodes/features and phonological forms. Some VI rules are context-insensitive. Others are context-dependent, and thus only apply under specific circumstances, yielding what is termed contextual allomorphy/suppletion. When multiple VI rules could in principle apply to a given terminal node, the more specific rule is selected if possible (the *Elsewhere Condition*).

In (23) below, I provide a set of VI rules that I will use to illustrate the behavior of English plural diminutives. This set includes rules for a noun that is regular in the plural (*duck*), one that takes an irregular plural suffix (*ox*), and one that shows umlaut and the absence of a plural suffix (*goose*). The different instances of N are given a numerical index to keep the VI rules for different nouns unambiguous.<sup>5</sup> Here we also see context-sensitive VI rules that encode the irregular expressions of the plural feature ( $\#_{[Plural]}$ ), as well as umlaut of *goose*.

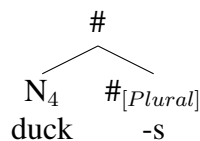
(23) *Some VI rules for English*

- a. N<sub>4</sub> ↔ duck
- b.  $\#_{[Plural]}$  ↔ -(e)s
- c. N<sub>83</sub> ↔ ox
- d.  $\#_{[Plural]}$  ↔ -en / N<sub>83</sub> \_\_\_\_
- e. N<sub>22</sub> ↔ goose
- f. N<sub>22</sub> ↔ geese / \_\_\_\_  $\#_{[Plural]}$
- g.  $\#_{[Plural]}$  ↔ ∅ / N<sub>22</sub> \_\_\_\_

Based on the ordering of morphemes in regular plurals as in (20) above, we can state that nouns are dominated by a number node (#), and that the diminutive intervenes between N and # if present (essentially following Moskal 2015). This is illustrated in (24) below with the noun *duck*, a regular noun which uses the default plural suffix *-e(s)* whether or not a diminutive is present:

(24) *Regular plural noun with and without a diminutive*

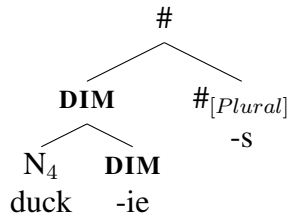
- a. *Regular plural noun*



<sup>5</sup> This follows the treatment of lexical roots in Harley (2014), though Harley decomposes roots into category-less heads dominated by separate category-determining elements, as is common in work using Distributed Morphology.



b. *Regular plural noun with diminutive*

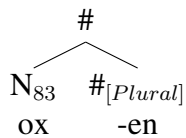


Like many analyses using Distributed Morphology, for concreteness I assume that multi-morphemic words are the result of head movement. Thus I posit that representations like those in (24) above are the result of movement of N to the head of the #P that dominates it, passing through DIMP on the way if present, creating a head-adjunction structure within which VI targets is terminal nodes.

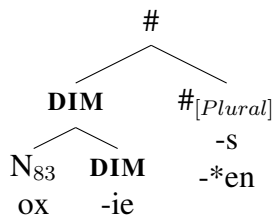
We can analyze English irregular plurals using context-sensitive VI rules, which as mentioned take precedence over default rules when possible. The rules needed for the coming analysis have already been provided in (23) above. For example, while the English plural feature  $\#[Plural]$  has a default rule realizing it as  $-(e)s$  (23b), there is also a special rule expressing the plural as  $-en$  when adjacent to the noun for *ox* (23d). When this N and  $\#[Plural]$  are next to each other, this context-sensitive VI rule can apply, yielding allomorphy of the plural, as (25a) below shows. However, our expectations differ when the diminutive stands between N and  $\#[Plural]$ . This is because context-specific VI rules typically require adjacency between the node that triggers the rule, and the node affected by it (Embick 2010; Bobaljik 2012; Bobaljik & Harley 2017). Indeed, as we saw in (22a) above, when the diminutive intervenes between *ox* and the plural suffix, the plural must take on its default form as diagrammed in (25b) below:

(25) *Plural noun with and without the diminutive*

a. *Noun with irregular plural*



b. *Diminutive blocks irregular plural*



Similar reasoning facilitates an analysis of irregular plural nouns with umlaut, as well as an explanation for why the diminutive should block irregular plural allomorphy with such nouns, as we saw in (22b-e) above. I will illustrate this using the noun *goose*, whose plural is *geese*. We can analyze such alternations as involving two context-sensitive VI rules: one rule that realizes this noun as *geese* rather than *goose* in the presence of  $\#[Plural]$ , as defined in (23f) above, and another that realizes  $\#[Plural]$  as  $\emptyset$  when next to this noun, as defined in (23g) above. When no diminutive intervenes between the noun and number node, both of these rules must apply, yielding irregular morphology as diagrammed in (26a) below. In contrast, when the diminutive inter-

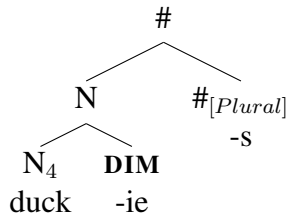


pare (27) with (22) above) adds another layer of complexity to this puzzle. I propose a solution that involves optionality in the way that the diminutive is introduced into the noun’s structure

It has been argued that diminutive affixes sometimes represent modifiers of the noun, analogous to adjunct phrases in syntax (see Gouskova & Bobaljik (2022) and references therein).<sup>7</sup> Additionally, research in syntax and semantics has proposed that adjunct/modifier phrases can be added into a structure late (Lebeaux 1991; Sauerland 1998, a.o.). The combination of these two proposals leads us to expect that in some languages, there should be the possibility of adding a diminutive to a word’s structure after a delay. I argue that this is the case for English.<sup>8</sup>

To make explicit my hypothesis that the English diminutive is an adjunct/modifier, I follow Gouskova & Bobaljik (2022) in diagramming N as re-projecting when the diminutive merges to it, as in (28) below. This is analogous to how adjuncts in syntax do not change the label of the phrase to which they attach.

(28) *Diminutive as modifier*



I argue that we correctly predict different results for the application of umlaut, depending on whether the diminutive is added early, or late. First, let’s consider the early merger scenario.

First, the diminutive attaches to N. Second, N merges with  $\#[_{Plural}]$ , creating the constituent

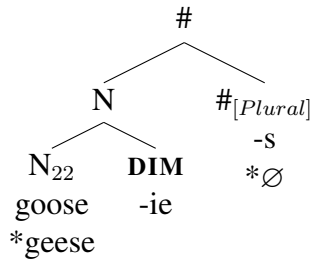
- 
- c. Silly **goosies** had fun “helping” with the mail today  
(<https://www.facebook.com/The-Adventures-of-Beaker-the-Goose-105468131174523/videos/silly-goosies-had-fun-helping-with-the-mail-today-/218106479519623/>)
  - d. Happy Tuesday from the **Geesies**! These guys are super chatty and curious  
([https://ne-np.facebook.com/102417658382199/videos/324955213105089/?\\_so\\_=\\_permalink](https://ne-np.facebook.com/102417658382199/videos/324955213105089/?_so_=_permalink))
  - e. Her **footies** were sticky and she stuck to my palm.  
(<https://www.flickr.com/photos/vickisnature/9534308889>)
  - f. The way my old man tucks in his **feeties** for loaf mode  
(<https://www.pinterest.com/pin/the-way-my-old-man-tucks-in-his-feeties-for-loaf-modehttpsiftt2oyd3pt-639089003348460550/>)
  - g. Gonna brush my **toothies**  
(<https://twitter.com/TheStarLi/status/1446828012561858565>)
  - h. The fish special! Nice **teethies**!  
([https://www.tripadvisor.com/LocationPhotoDirectLink-g187819-d1088126-i254111485-Trattoria\\_Dal\\_Billy-Manarola\\_Cinque\\_Terre\\_Italian\\_Riviera\\_Liguria.html](https://www.tripadvisor.com/LocationPhotoDirectLink-g187819-d1088126-i254111485-Trattoria_Dal_Billy-Manarola_Cinque_Terre_Italian_Riviera_Liguria.html))

<sup>7</sup> We can understand “adjunct” diminutives as semantically analogous to adjectives, which are canonical adjuncts to NP. Following Heim & Kratzer (1998), nouns and adjectives are both predicates of type  $\langle e,t \rangle$ . For instance, a noun  $\lambda x.[x = \text{dog}]$  and adjective  $\lambda y.[y = \text{cute}]$  are both  $\langle e,t \rangle$ , and thus the adjective can be semantically united with the noun via the rule of Predicate Modification. We can posit the very same semantic template for a diminutive, for example,  $\lambda z.[z = \text{small/endearing}]$ . Such a diminutive essentially behaves semantically like an adjective, justifying the analysis of diminutives as adjunct elements.

<sup>8</sup> This analysis entails that the diminutive does not head a phrase in the functional projection of the noun, contrary to what I stated in section 4. However, whether the diminutive morpheme projects a phrase or not is irrelevant here: all that matters is the timing of the diminutive’s insertion between N and  $\#[_{Plural}]$ .

in (29) below. This constituent is then subject to VI rules. Since at this time the diminutive intervenes between N and  $\#[_{Plural}]$ , neither of these nodes can trigger use of a context-sensitive VI rule on the other. Thus they both take on their default forms, and umlaut does not occur.

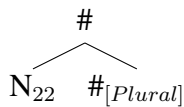
(29) *Umlaut blocked by an early-merged diminutive*



This blocking effect is the same as what we saw in the previous section (see 26b), which took for granted an early-merge analysis of the diminutive due to assuming it to be a typical head.

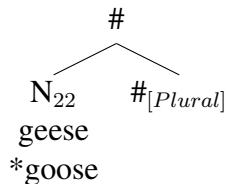
Next let's consider what happens if the diminutive is merged later. I argue that in this situation, umlaut persists. This analysis relies on another hypothesis commonly adopted in works using Distributed Morphology—that after a constituent is constructed and VI application begins, VI proceeds step-by-step and bottom-up, starting at the root (Bobaljik 2000, 2012; Embick 2010). In this paper it has not yet been necessary to be explicit about this, since in derivations with an early-merged diminutive, umlaut will be blocked regardless of whether VI rules happened to apply bottom-up or top-down. However, maintaining a bottom-up theory is vital at this stage of the analysis. In the case of a late-merged diminutive, I argue that all non-modifier elements are first combined, and then VI begins. A plural noun will involve (at least) the following structure (30):

(30) *A plural noun right before VI*



After (30) is built VI rule application begins, starting at N. Since at this point N is adjacent to  $\#[_{Plural}]$ , the rule of umlaut triggered by  $\#[_{Plural}]$  will apply (31):

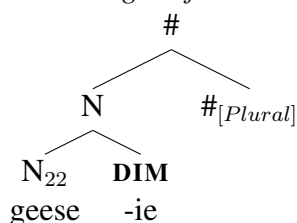
(31) *Umlaut of N applies*



I argue that right after N is spelled-out, the diminutive can be late-merged to it. Assume that the diminutive node is subjected to its appropriate VI rule at this time.<sup>9</sup> We thus derive the representation in (32) below. Here the only thing remaining to undergo VI is  $\#[_{Plural}]$ .

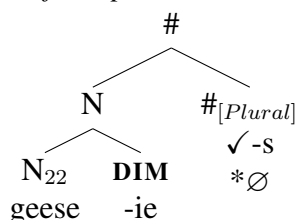
<sup>9</sup> Alternatively, we might assume that the diminutive was introduced in a separate workspace and spelled-out there, before being merged into the structure of the plural noun. See Piggott & Travis (2014) for a similar implementation of adjunction into word structures in Ojibwe.

(32) *Late merger of the diminutive*



At this point, it is not possible for this N to trigger use of a context-sensitive VI rule for  $\#_{[Plural]}$ , since the diminutive intervenes between the two. Thus when VI applies to  $\#_{[Plural]}$ , the only option is for it to take its default form  $-(e)s$ , as in (33):

(33) *Default plural VI rule applies after late-merge of diminutive*



In summary, an early-merged diminutive removes adjacency between N and  $\#_{[Plural]}$  from the beginning, resulting in a total lack of irregular morphology. In contrast, attachment of the diminutive above N after the merger of  $\#_{[Plural]}$  and the application of VI to N produces a situation where N undergoes umlaut, but  $\#_{[Plural]}$  is forced to take its default form. We thus derive the optionality of umlaut in irregular plural nouns with a diminutive.<sup>10</sup>

The assumption that VI proceeds bottom-up, starting at the root, is essential for this analysis. This is what makes it possible to spell-out N and achieve umlaut before deciding the form of  $\#_{[Plural]}$ . Allowing the possibility of top-down VI, by contrast, makes the incorrect prediction that it should be possible to have a silent  $\#_{[Plural]}$  but no umlaut, which we have seen to be unacceptable (22). Specifically, top-down VI allows the following derivation: Step 1 - merge N and  $\#_{[Plural]}$ . Step 2 - realize  $\#_{[Plural]}$  with its suppletive null form since it is adjacent to N. Step 3 - late-merge the diminutive between N and  $\#_{[Plural]}$ . Step 4 - assign N its default umlaut-less form since at that time it is not adjacent to  $\#_{[Plural]}$ . Maintaining that VI is strictly bottom-up avoids incorrectly predicting the possibility of this derivation for irregular plural nouns.<sup>11</sup>

<sup>10</sup> There is a third option: applying VI rules to both N and  $\#_{[Plural]}$  before late-merging the diminutive in between. Since in this case N and  $\#_{[Plural]}$  are adjacent when VI applies, they would both take on irregular forms triggered by context-sensitive VI rules. We have seen in (22) that such examples are illicit, so this option must be ruled out. This possibility is excluded by the *Linear Edge Condition* of Nissenbaum (2000), which states that late merge can only target the edge of a spelled-out structure. In an irregular plural like *geese*, a spelled-out  $\#_{[Plural]}$  node has been realized as  $\emptyset$ , so we might not expect late merge of the diminutive between N and  $\#_{[Plural]}$  to violate the Linear Edge Condition here. However, in chapter 5 Nissenbaum explicitly shows based on evidence at the phrasal and word-internal levels that the Linear Edge Condition must be sensitive even to nodes that are silent. This is a potentially counter-intuitive result, but it is compatible with theories in which un-pronounced nodes are subjected to linearization by Phonological Form (Arregi & Nevins 2012; Haugen & Siddiqi 2016). This line of reasoning provides a justification for banning late merger of a diminutive between a N and  $\#_{[Plural]}$  that have been spelled out, as needed.

<sup>11</sup> This analysis thus stands in opposition to works arguing either for the possibility of top-down VI or ‘everything at once’ VI. See Deal & Wolf (2017) and references therein for relevant discussion.

**6. Concluding remarks.** I have argued that diminutive /-i/ is productive, but required to be adjacent to a stress-bearing syllable. I showed that this constraint motivates truncation of nouns that would otherwise result in illicit diminutives. I went on to argue that this constraint is applicable to the diminutive only, despite the existence of a homophonous suffix. Thus this must be a morpheme-specific phonological constraint, which is only enforceable under theories in which phonology and morphology overlap to some degree. Furthermore, I showed that the diminutive interrupts irregular plural morphology, though optionally allows plural ablaut to persist.<sup>12</sup> I argued that these facts emerge from the adjacency-sensitive nature of contextual VI rules, the bottom-up nature of VI, and the hypothesis that the diminutive is an adjunct/modifier which can be attached late. This analysis demonstrates a successful application of concepts from syntax in the domain of morphology—something we expect to see if the foundation of morphology is syntactic structure, as argued in theories like Distributed Morphology. Overall then, this work argues for the overlap of phonology with morphology, and morphology with syntax.

## References

- Arregi, Karlos & Andrew Nevins. 2012. *Morphotactics: Basque auxiliaries and the structure of Spellout*. Dordrecht: Springer.
- Bobaljik, Jonathan. 2000. The ins and outs of contextual allomorphy. In Kleanthes K. Grohmann & Caro Struijke (eds.), *Proceedings of the Maryland Mayfest on Morphology* 35–71. College Park: University of Maryland Working Papers in Linguistics.
- Bobaljik, Jonathan. 2012. Universals in comparative morphology: Suppletion, superlatives, and the structure of words. Cambridge, MA: MIT Press.
- Bobaljik, Jonathan & Heidi Harley. 2017. Suppletion is local: Evidence from Hiaki. In Heather Newell, M’aire Noonan, Glyne Piggott & Lisa Travis (eds.), *The structure of words at the interfaces*, 141–159. Oxford: Oxford University Press.
- Davis, Colin. 2019. Mismatched suppletion in Azeri as morphology/phonology competition. In Paloma Jeretič, Yağmur Sağ (eds.), *Proceedings of the 4th Workshop on Turkic and Languages in Contact with Turkic*, 29–40. Washington, DC: Linguistic Society of America. <https://doi.org/10.3765/ptu.v4i1.4578>.
- Deal, Amy Rose & Matthew Wolf. 2017. Outwards-sensitive phonologically-conditioned allomorphy in Nez Perce. In Vera Gribanova & Stephanie Shih (eds.), *The morphosyntax-phonology connection: Locality and directionality at the interface*, 29–60. Oxford: Oxford University Press.
- Embick, David. 2010. Localism versus globalism in morphology and phonology. Cambridge, MA: MIT Press.
- Gouskova, Maria & Jonathan Bobaljik. 2022. The lexical core of a complex functional affix: Russian baby diminutive *-onok*. *Natural Language & Linguistic Theory* 40. 1075–1115. <https://doi.org/10.1007/s11049-021-09530-1>.

<sup>12</sup> I have discussed how the diminutive interacts with independent morphological rules, but I am aware of two potential suppletion rules in English triggered by the diminutive itself. First, the diminutive causes an irregular vowel change of *cat* to *kit* (ia). Second, we also see suppletion of *rabbit* to *bun*, though we would have expected mere truncation to *rab* here (ib):

- (i) a. cat ([kæt]) → kitty ([ˈki.ti]) / \*catty  
 b. rabbit ([ˈræ.bɪt]) → bunny ([ˈbʌ.ni]) / \*rabbitie, \*rabbie

If diminutives can be merged after N has undergone VI, we would likely expect these instances of suppletion to be optional, contrary to fact. I leave this as a puzzle for future work.

- Halle, Morris & Alec Marantz. 1993. Distributed Morphology and the pieces of inflection. In Ken Hale & Samuel Jay Keyser (eds.), *The view from Building 20*, 1–52. Cambridge, MA: MIT Press.
- Harley, Heidi. 2014. On the identity of roots. *Theoretical Linguistics* 40. 225–276. <https://doi.org/10.1515/tl-2014-0010>.
- Harley, Heidi & Rolf Noyer. 1999. Distributed Morphology. *Glott International* 4. 3–9.
- Haugen, Jason & Daniel Siddiqi. 2016. Towards a restricted realization theory: Multi-morphemic monolistemicity, portmanteaux, and post-linearization spanning. In Heidi Harley & Daniel Siddiqi (eds.), *Morphological metatheory*, 343–386. John Benjamins, Amsterdam.
- Heim, Irene & Angelika Kratzer. 1998. *Semantics in Generative Grammar*. Oxford: Blackwell.
- Huddleston, Rodney & Geoffrey K. Pullum. 2002. *The Cambridge grammar of the English language*. Cambridge: Cambridge University Press.
- Kempe, Vera, Patricia Brooks & Steven Gillis. 2005. Diminutives in child-directed speech supplement metric with distributional word segmentation cues. *Psychonomic Bulletin & Review* 12. 145–151. <https://doi.org/10.3758/BF03196360>.
- Lappe, Sabine. 2002. Monosyllabicity in Prosodic Morphology. The case of truncated personal names in English. In Gert Booij & Jaap van Marle (eds.), *Yearbook of morphology*, 135–186. Dordrecht: Kluwer.
- Lebeaux, David. 1991. Relative clauses, licensing, and the nature of the derivation. In Susan Rothstein (ed.), *Perspectives on phrase structure: Heads and licensing* (Syntax and Semantics 25), 209–239. London: Brill. [https://doi.org/10.1163/9789004373198\\_011](https://doi.org/10.1163/9789004373198_011).
- McCarthy, John & Alan Prince. 1998. Prosodic Morphology. In Andrew Spencer & Arnold Zwicky (eds.), *The handbook of morphology*, 283–305. Oxford: Blackwell.
- McCarthy, John J & Alan Prince. 1993. Generalized alignment. In Geert Booij & Jaap van Marle (eds.), *Yearbook of morphology*, 79–153. Dordrecht: Kluwer.
- Moskal, Beata. 2015. Limits on allomorphy: A case-study in nominal suppletion. *Linguistic Inquiry* 46. 363–375. [https://doi.org/10.1162/LING\\_a\\_00185](https://doi.org/10.1162/LING_a_00185).
- Nissenbaum, John. 2000. *Investigations of covert phrase movement*. Cambridge, MA: MIT dissertation.
- Pater, Joe. 2000. Non-uniformity in English secondary stress: The role of ranked and lexically specific constraints. *Phonology* 17. 237–274. <https://doi.org/10.1017/S0952675700003900>.
- Pater, Joe. 2009. Morpheme-specific phonology: Constraint indexation and inconsistency resolution. In Steve G. Parker (ed.), *Phonological argumentation: Essays on evidence and motivation*, pp. n/a. London: Equinox. <https://doi.org/doi:10.7282/T3FX77CX>.
- Pertsova, Katya. 2015. Interaction of morphological and phonological markedness in Russian genitive plural allomorphy. *Morphology* 25. 229–266. <https://doi.org/j329>.
- Piggott, Glyne & Lisa Travis. 2014. Adjuncts within words and complex heads. In Raffaella Folli, Christina Sevdali & Robert Truswell (eds.), *Syntax and its limits*, Oxford: Oxford University Press.
- Prince, Alan & Paul Smolensky. 2004. *Optimality Theory: Constraint interaction in Generative Grammar*. Oxford: Wiley-Blackwell.
- Sauerland, Uli. 1998. *On the making and meaning of chains*. Cambridge, MA: MIT dissertation.
- Schneider, Klaus. 2003. *Diminutives in English* (Linguistische Arbeiten 479). Tübingen: Max Niemeyer Verlag.
- Wolf, Matthew. 2008. *Optimal interleaving: Serial phonology-morphology interaction in a constraint-based model*. Amherst: University of Massachusetts dissertation.
- Wolf, Matthew. 2009. Lexical insertion occurs in the phonological component. In Eulàlia Bonet, Maria-Rosa Lloret & Joan Mascaró (ed.), *Understanding allomorphy: Perspectives from optimality theory*, 361–407. London: Equinox.