

# The Split Morphology Hypothesis: Evidence from Yiddish

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## 1. The Problem

This paper focuses on what I call the “split morphology hypothesis”—the idea that some morphological rules are in the lexicon and some are extralexical. Anderson (1982) has proposed a version of this hypothesis positing some morphological rules that refer to the internal structure of lexical entries and others that refer to the morphosyntactic representations in syntactic structures. The former apply before lexical insertion in syntactic structures. Since the latter refer to morphosyntactic representations unavailable in the lexicon but present in syntactic structures, they can apply only after lexical insertion.<sup>1</sup> This distinction in terms of the operations performed by rules correlates in an interesting way with the distinction between derivational and inflectional morphology. Since rules of derivational morphology refer to lexical entries’ internal structure independently of morphosyntactic representations, they are predicted to be lexical. Since rules of inflectional morphology concern syntactically relevant morphosyntactic representations, they cannot apply until after lexical insertion. Anderson makes one consequence of his hypothesis explicit:

- (1) It represents the fact, often noted but never really explained, that (with certain well-defined exceptions) inflectional morphology appears “outside of” derivational morphology. For instance, if a morphologically complex form contains both derivational and inflectional suffixes, the inflectional ones will follow the derivational ones. (p. 609)

This chapter examines two aspects of Yiddish noun morphology—the

<sup>1</sup>To avoid confusion with the term “postlexical,” which has acquired a specific meaning in the tradition of lexical phonology inaugurated by Kiparsky (1982), I call such rules “extralexical.”

## 2.2 The Regular Plural Rules

The largest class of Yiddish nouns form their plurals with the suffix *-en*, which is reduced to syllabic *n* after a nonnasal, nonsyllabic consonant by a regular phonological process (Sapir, 1915).<sup>4</sup>

(2)	Sg braid cop shoe	pl <i>cepl</i> <i>sixl</i>	1st dim sg <i>ceplex</i> <i>sixlex</i>	2d dim sg <i>cepele</i> <i>sixle</i>	2d dim pl <i>ceplex</i> <i>sixlex</i>
(3)	Sg child <i>kinder</i>	pl <i>kinderlex</i>	Dim pl <i>Dim pl</i>		
(4)	Sg body <i>gufim</i>	pl <i>gufimlex</i>	Dim pl <i>Dim pl</i>		
	pupil <i>talmid</i>	<i>talmidim</i>	<i>talmidimlex</i>		

In (2) the plural is formed by ablaut, and the diminutives (both singular and plural) are apparently formed on the plural form of the noun. This is also the case in (3), where the plural form exhibits the suffix *-er* (in addition to ablaut in *derner*). The examples in (4) are Hebrew/Aramaic loan words with plurals in *-im*, where the diminutive plural *-lex* occurs suffixed to the plural form. (2–4) all appear to counterexemplify the prediction of the split morphology hypothesis.

We examine these cases in detail, concluding that Yiddish does not disconfirm the split morphology hypothesis, but actually supports it.

## 2. Plural Formation in Yiddish

### 2.1 Traditional Classifications

Traditional Yiddish grammars generally distinguish a large number of noun classes according to whether they form their plurals with *-s*, *-en*, *-er*, *ø*, and diminutive suffixes do not affect stress.

<sup>2</sup>Yiddish has several distinct diminutive forms, of which only two are relevant here: the first diminutive, marked by the suffixes *-l* (sg) and *-lex* (pl), and the second diminutive, marked by *-ele* and *-ellex*. I use *o* to represent [ɔ] and *e* to represent the unstressed vowel that appears as [e] in an open syllable and as schwa in a closed one. Stress is on the initial syllable in Germanic words and on the penultimate syllable in Hebrew/Aramaic words. Loan words from other languages may have stress on a different syllable, in which case I indicate it explicitly. The diminutive suffixes do not affect stress.

<sup>3</sup>I have especially benefited from consulting Weinreich (1965, 1968) and Zarecki (1929). There is also a class of plurals in *-es*, used primarily for Slavic loans, especially those ending in *-ik*. These plurals do not concern us here.

<sup>4</sup>That *-en* is reduced to syllabic *n* (rather than an underlying *-n* being converted to *-en* by epenthesis) can be seen from the dative forms of nouns ending in unstressed *-e*, e.g., *tate* ‘father’, dative (*dem*) *tat*, *zeyde* ‘grandfather’, dative (*dem*) *zeydn*.

(5)	Sg newspaper language notebook ear	Pl <i>caytung</i> <i>šprax</i> <i>heft</i> <i>oyer</i>	Sg language notebook ear	Pl <i>caytung</i> <i>špraxn</i> <i>heftn</i> <i>oyer</i>
	door	<i>tir</i>	door	<i>tirn</i>
	engineer	<i>inženir</i>	engineer	<i>inženirm</i>
	sea	<i>yam</i>	sea	<i>yamen</i>
	blackboard	<i>tonl</i>	blackboard	<i>tovl</i>
	heaven, sky	<i>himl</i>	heaven, sky	<i>himlen</i>
	ideal	<i>ideál</i>	ideal	<i>ideálin</i>
	magazine	<i>žurnál</i>	magazine	<i>žurnálh</i>

Nouns ending in an unstressed vowel form their plurals in *-s*:

(6)	Sg a. gift war	Pl <i>matone</i> <i>milxome</i>	Sg joyous occasion tombstone	Pl <i>matones</i> <i>milxomes</i>
	bride	<i>maceyye</i>	bride	<i>maceyyes</i>
	wedding	<i>kale</i>	wedding	<i>kales</i>
	kingdom	<i>xásene</i>	kingdom	<i>xásenes</i>
	piece of advice	<i>meluxe</i>	piece of advice	<i>meluxes</i>
	family	<i>eyce</i>	family	<i>eyces</i>
		<i>mišpoxe</i>		<i>mišpoxes</i>

biography	<i>biografíye</i>
revolution	<i>revolúciye</i>
father	<i>tate</i>
grandfather	<i>zeyde</i>
piano	<i>piane</i>
form	<i>forme</i>
group	<i>grupe</i>
b.	
question	<i>frage</i>
task	<i>oyfgabe</i>
legend	<i>legende</i>
c.	
ghetto	<i>getto</i>
Nazi	<i>naci</i>

- (6a) shows this pattern in a variety of nouns, including Hebrew/Aramaic and Slavic loans. (6b) shows it in words of Germanic origin. While most words ending in an unstressed vowel end in *-e*, (6c) shows the same pattern in loan words ending in other unstressed vowels.<sup>5</sup>
- These data are accounted for by the rules in (7).
- (7) PLURAL INFLECTION
- a.  $[\mathbf{X} \mathbf{V}]_N \rightarrow [\quad]_N + s$   
[–str]
  - b.  $[\quad]_N \rightarrow [\quad]_N + en$

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By the principle of disjunctive ordering tracing back to Panini, and incorporated into generative theory in different forms by Chomsky (1967), Chomsky and Halle (1968), Anderson (1969), and Kiparsky (1973), these rules apply disjunctively. (7a), having a more specific environment, applies first, making the forms to which it applies ineligible to undergo (7b). Nouns ending in an unstressed vowel are thus assigned the plural suffix *-s*, the rest getting *-en*.<sup>5</sup>

<sup>5</sup>A class of nouns ending in a resonant have plurals in *-s*:

Sg	Pl	Sg	Pl
rain	<i>regn</i>	<i>regnis</i>	<i>briy</i>
life	<i>lebn</i>	<i>lebns</i>	<i>fis</i>
cemetery	<i>beysoylem</i>	<i>beysoylems</i>	<i>stern</i>
feather	<i>feder</i>	<i>feders</i>	<i>fraynd</i>
theater	<i>teater</i>	<i>teaters</i>	<i>fensier</i>
clock	<i>zeyster</i>	<i>zeysters</i>	<i>svester</i>
			<i>mol</i>
			<i>bild</i>
			<i>child</i>
			<i>kind</i>
			<i>lid</i>
			<i>vayb</i>

These plurals can be accounted for by a lexical rule. The deverbal agentive suffix *-er* should be marked for membership in this class: *ßayber*'writers', *arbeter*'workers', etc. The suffix *-er* that forms nouns denoting nationalities, residents of cities, etc. is in the class with zero plurals: *xinezer*'Chinese', *italyener*'Italians', *roymer*'Romans', *parizer*'Parisians', etc.

Under both Anderson's hypothesis and Lieber's idea that regular inflection is extralexical, the rules in (7) are extralexical.

### 2.3 The Prediction of the Split Morphology Hypothesis

The regular plural suffixes derived by (7) never appear in diminutives.

(8)	Sg	Sg dim	Pl	Pl dim
	ear	<i>oyer</i>	<i>oyern</i>	<i>oyerlex</i>
	piece of advice	<i>eyce</i>	<i>eyces</i>	<i>eycleslex</i>
	gift	<i>matone</i>	<i>matonele</i>	<i>matoneslex</i>

In plural diminutives we find *-lex*, *-en* and *-s* never appear. This is exactly what the split morphology hypothesis predicts. Diminutives, an aspect of derivational morphology, are derived in the lexicon. Since inflectional rules like (7) are extralexical, they cannot feed rules of derivational morphology. This accounts for the starred forms in (8). Further, following Aronoff's (1976), Kiparsky's (1983), and Anderson's (1986) interpretation of the disjunctive ordering principle, the existence of plural forms like *matonelex* in the lexicon blocks application of (7), thus blocking forms like *\*matonelex*.

In brief, the data in (8) strongly support the split morphology hypothesis, which explains them. The apparent counterexamples to the split morphology hypothesis differ from the examples in (8): They either do not involve plural affixation or involve lexically restricted types of plural affixation that occur in the lexicon. This explains their occurrence "inside" diminutive suffixes.

### 2.4 Two Restricted Classes of Plurals

(9) illustrates two restricted classes of nouns: those with no plural inflection (often called ZERO PLURALS) and those with plurals in *-er*.

(9)	a.	letter	Sg	Pl
		fish	<i>briy</i>	<i>briy</i>
		star	<i>fis</i>	<i>fis</i>
		friend	<i>stern</i>	<i>stern</i>
		window	<i>fraynd</i>	<i>fraynd</i>
		sister	<i>fensier</i>	<i>fensier</i>
		time	<i>svester</i>	<i>svester</i>
			<i>mol</i>	<i>mol</i>
			<i>bild</i>	<i>bilder</i>
			<i>child</i>	<i>kinder</i>
			<i>kind</i>	<i>lider</i>
			<i>lid</i>	<i>vayb</i>

hundred	<i>hundert</i>	<i>hunderter</i>
thousand	<i>toyznt</i>	<i>toyznter</i>
stone	<i>§teyn</i>	

These two classes have a restricted membership that is not phonologically predictable. Zero and *-er* plurals are therefore listed in the lexicon, the singular-plural correspondences accounted for by lexical rules. Under the disjunctive ordering principle, the existence of these lexical plural forms blocks application of (7).

### 3. Plurals with Ablaut

#### 3.1 The Phenomenon

Some nouns form plurals with ablaut:

(10)	Sg	Pl
a.	<i>wall</i> night mountain	<i>vant</i> <i>naxt</i> <i>barg</i>
b.	<i>name</i> pot daughter	<i>nomen</i> <i>top</i> <i>toxter</i>
c.	<i>foot</i> brother	<i>fus</i> <i>bruder</i>
d.	<i>mouse</i>	<i>moyz</i>
e.	<i>bird</i>	<i>feygl</i>

  

(11)	Sg	Pl
a.	<i>leaf</i> , <i>page</i> forest	<i>blat</i> <i>vald</i>
b.	people word	<i>folk</i> <i>vort</i>
c.	castle book	<i>slos</i> <i>bux</i>
d.	belly	<i>stiber</i>
e.	tree	<i>bayxer</i>

The examples in (10) form their plurals by ablaut alone, those in (11) by ablaut plus the *-er* suffix. As the breakdown into (a–e) indicates, the vowel alternations in the two classes are the same.

Whether or not a stem ablauts is not phonologically predictable:

(12)	Sg	Pl
a.	<i>plan</i> airplane	<i>plan</i> <i>aeroplán</i>
b.	<i>man</i> husband	<i>man</i> <i>manen</i>
c.	<i>son</i> sun	<i>zun</i> <i>zunen</i>
d.	<i>square</i> , <i>place</i> crack	<i>plac</i> <i>plac</i>
e.	<i>he-goat</i> cheek	<i>bak</i> <i>bakn</i>
f.	<i>mouse</i> Frenchman	<i>moyz</i> <i>francoyz</i>

#### 3.2 The Stem Suppletion Analysis

A theory of the lexicon under which the lexicon contains both uninflected stems and irregularly inflected forms provides the basis for a theory of suppletion that distinguishes two types of suppletion—stem suppletion and full suppletion—according to whether the suppletive items are uninflected stems or inflected forms. We find examples of both types of suppletion in Yiddish noun morphology.

Generative treatments of ablaut—especially of German umlaut, which, like Yiddish ablaut, is the residue of a Middle High German phonological rule—have posited vowel-changing rules, sometimes combined with affixation rules, to produce the ablaut (umlaut) forms.<sup>6</sup> I call this the “rule analysis.” I propose instead that ablaut be treated as a case of stem suppletion, with both stems listed in the lexicon. There are two reasons for positing these stems (rather than positing only inflected singular and plural forms). First, as pointed out in Section 3.4, this makes it possible to account for singular-plural alternations by the same lexical rules needed for certain nonablaut stems. Second, the ablaut stems serve as input to the rules that derive diminutives, discussed in the appendix. Since these rules operate only on the ablaut stems of ablaut/nonablaut pairs, a feature [ablaut] can be used to distinguish them. As is made clear in Section 5, the ablaut stems must be unmarked for number.

<sup>6</sup>I use the term “umlaut” for a phonological phenomenon, “ablaut” for a morphological one that is not phonologically conditioned. Although modern German has ablaut, not umlaut, by this criterion, most scholars speak of it as “umlaut.” Some recent treatments of German ablaut are briefly discussed in Section 6.

I give several arguments for the stem suppletion analysis before turning to its consequences for the split morphology hypothesis.

### 3.5 The Relevance of Disjunctive Ordering

The plural of many nouns differs from the singular in two ways: ablaut and suffixation with *-er*. The fact that ablaut and suffixation are not mutually exclusive would present a problem for the disjunctive ordering principle if ablaut and suffixation were accounted for by distinct morphological rules; the disjunctive ordering principle would incorrectly predict that only one of these rules could apply in a given case.

One solution to this problem would be to effect ablaut and *-er* suffixation by a single rule. However, diminutives are also formed by ablaut plus suffixation, as can be seen in (2) and (14). The distinct plural and diminutive rules would then partially duplicate each other in that both would derive ablaut stems in addition to suffixation. Further, the ablaut stems are always the same in both cases. For example, while stems in *oy* can have corresponding ablaut stems either in *ay* or in *ey*, no noun in *oy* uses a stem in *ay* for plurals and one in *ey* for diminutives, or vice versa. That situation should be excluded, but with plural and diminutive rules effecting both ablaut and suffixation, nothing would exclude it.

Of course, other ways could be found to save the disjunctive ordering principle in such cases (discussed in some detail by Anderson, 1986). Under the stem suppletion analysis, however, the problem does not arise. Since there is no rule deriving the ablaut form from the nonablaut form, the problem disappears.

### 3.4 Argument Two: Parallels between Ablaut and Nonablaut Plural Classes

The second argument for the stem suppletion analysis comes from the fact that the ablaut plurals divide into two classes: those with the suffix *-er* and those with no ("zero") plural suffix. These two classes of ablaut plurals, displayed in (10) and (11), exactly parallel the two classes of nonablaut plurals in (9). Under the rule analysis, the rules accounting for ablaut plurals and the plurals in (9) would be distinct; it would not be possible to take advantage of their partial similarity. Under the stem suppletion analysis, with the two stems listed in the lexicon, the plural forms of the ablaut stems can be accounted for by lexical rules in the same way as the plural forms in (9). For this to be possible, the ablaut stems must be listed in the lexicon alongside the inflected forms, so that the lexical rules can relate them in the same way they relate the pairs in (9). Under the stem suppletion analysis, then, the plurals of ablaut stems are just a special case of the plural types in (9). By the

### 4. Diminutives with Ablaut

#### 4.1 The Proposal

We now return to the split morphology hypothesis and its prediction, summarized in (1), about the interaction of plural and diminutive formation in Yiddish. The data in (2) initially seemed to falsify its predictions, since diminutives seemed to be derived from the plural form. Under the stem suppletion analysis of Section 3, however, there is no problem for the split morphology hypothesis. Both ablaut and nonablaut stems are listed in the lexicon, and diminutives are formed from ablaut stems, not from plural forms.<sup>7</sup> Interestingly, there is evidence internal to Yiddish for this analysis.

<sup>7</sup>The rules that derive diminutives are discussed in the appendix.

#### 4.2 Argument One: Nonappearance of the Plural Suffix

Diminutives appear to be derived from plural forms in (2) because *cop* and *šux* form their plurals with ablaut alone, like the nouns in (10). If we examine the type illustrated in (11), which form their plurals with ablaut plus *-er*, we see clearly that the diminutive is derived from the ablaut stem alone, not from the plural form. The plural suffix *-er* does not appear in the diminutive:<sup>8</sup>

(14)	Sg	<i>ponim</i>	<i>penimer</i>	<i>peniml</i>	Pl	1st dim sg	2d dim sg	1st dim pl	2d dim pl
nose	<i>noz</i>	<i>nezer</i>	<i>nezl</i>	<i>nezelex</i>					
forest	<i>vald</i>	<i>welder</i>	<i>veldl</i>	<i>veldlex</i>					
book	<i>bux</i>	<i>bixer</i>	<i>bixl</i>	<i>bixlex</i>					
room	<i>stub</i>	<i>stiber</i>	<i>stibl</i>	<i>stiblex</i>					
house	<i>hoyz</i>	<i>hayzer</i>	<i>hayzl</i>	<i>hayzlex</i>					
tree	<i>boym</i>	<i>beymer</i>	<i>beyml</i>	<i>beymlex</i>					
belly	<i>boyx</i>	<i>bayxer</i>	<i>bayxl</i>	<i>bayxlex</i>					

Forms like \**penimerlex*, \**nezerlex*, \**velderlex*, do not exist.<sup>9</sup> The diminutives are thus derived from ablaut stems, not from inflected plural forms.

#### 4.3 Argument Two: Nouns with Distinct Stems in the Plural and Diminutive

The final argument that diminutives with ablaut (with the exception of *kinderlex* and *dernierlex*) are not derived from plurals comes from a small class of nouns that are exceptions to the generalization that the ablaut stem appears in both the plural and diminutive. These nouns have an ablaut stem used to form diminutives but undergo the regular plural rule (7):

(15)	Sg	<i>gas</i>	<i>gasn</i>	<i>gesl</i>	Pl	1st dim	2d dim		
cheek	<i>bak</i>	<i>bakn</i>	<i>bekl</i>	<i>bekele</i>					
hare	<i>hoz</i>	<i>hozn</i>	<i>hezl</i>	<i>hezele</i>					
bundle	<i>bunt</i>	<i>bunn</i>	<i>bintl</i>	<i>bintle</i>					
broth	<i>yoyx</i>	<i>yoynn</i>	<i>yayxl</i>	<i>yayxele</i>					
dove	<i>toyb</i>	<i>toybn</i>	<i>taybl</i>	<i>taybelle</i>					
eye	<i>oyg</i>	<i>oygn</i>	<i>eygl</i>	<i>eygele</i>					

These examples show clearly that the diminutive is formed not from the plural

<sup>8</sup>*Ponim* does not have a second diminutive because it fails to meet the stress requirements of the second diminutive rule, discussed in the appendix. The rules given there also account for other gaps in diminutive paradigms.

<sup>9</sup>The forms in (3) are discussed in Section 4.4.

#### 4.4 Ablaut Plurals and the Split Morphology Hypothesis

form, but from a separate ablaut stem.<sup>10</sup> Forms like those in (2) are therefore fully consistent with the split morphology hypothesis.

(14) and (15) show that diminutives are formed on ablaut stems, not on plural forms. The grammar must treat the examples in (3) as exceptions. However, even these exceptions do not counterexemplify the split morphology hypothesis. Since only a restricted class of nouns have plurals in *-er* (see Section 2.4), affixation with *-er* must be stated by a lexical rule, which means that these plurals are in the lexicon. They are therefore available for the derivation of diminutives. The fact that they undergo diminutive formation in the lexicon is entirely consistent with the split morphology hypothesis.

These forms contrast with the few nouns with ablaut stems that do not have lexical zero or *-er* plurals. By the disjunctive ordering principle, they undergo (7). Since (7) is extralexical and derivational rules are in the lexicon, the split morphology hypothesis predicts that the diminutive suffix cannot follow the plural suffix due to (7). This is correct:

(16)	Sg	<i>maiden</i>	<i>moyd</i>	<i>meydl</i>	Pl	1st dim sg	<i>meydh</i>	<i>meydlex</i>	* <i>meydnlex</i>
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The contrast between (3) and (16) brings out what the split morphology hypothesis predicts. It allows forms listed in the lexicon to undergo derivational rules, whether they are stems like the ablaut stems that form the diminutives in (14) and (15) or inflected forms like the plurals that form the diminutives in (3). It predicts that inflected forms due to extralexical rules like (7) cannot undergo derivational rules. (16), like (8), confirms this prediction.

#### 5. Diminutives of Hebrew/Aramaic Loan Words

Yiddish has a large number of loan words from Hebrew and Aramaic. Those ending in an unstressed vowel regularly form their plurals by rule (7a), as illustrated in (6a). The plural suffix *-s* cannot occur in their diminutives, as (8) shows. Hebrew/Aramaic nouns ending in a consonant, however, appear in the patterns of (4) and (17).

<sup>10</sup>These examples also provide evidence for the disjunctive ordering of morphological rules. For nouns with an ablaut plural, the existence of this special plural form prevents application of the regular plural rules in (7). Where there is no such plural form, as in the cases in (15), (7) applies, producing “regular” plurals.

	Sg	Sg dim	Pl	Pl dim
(17) smart person	<i>xoxem</i>	<i>xaxomimlex</i>	<i>xaxomim</i>	<i>xaxomimlex</i>
Chasid	<i>xosid</i>	<i>xasidim</i>	<i>xasidim</i>	<i>xasidimlex</i>
delicacy	<i>mayxl</i>	<i>mayxele</i>	<i>mayxolim</i>	<i>mayxolimlex</i>
The problem for the split morphology hypothesis is the fact that in the plural, the diminutive suffix follows the plural <i>-im</i> .				
Nouns in this class exhibit a high degree of irregularity in their singular-plural alternations:				
(18)		Sg	Pl	
a.	thief	<i>ganef</i>	<i>ganovim</i>	
	miracle	<i>nes</i>	<i>nism</i>	
	dead person	<i>mes</i>	<i>meysim</i>	
	sin	<i>xet</i>	<i>xatoim</i>	
	rabbi	<i>rov</i>	<i>xabonim</i>	
	fool	<i>nar</i>	<i>naronim</i>	
	condition	<i>tnay</i>	<i>tnoim</i>	
	religious school	<i>xeyder</i>	<i>xadorim</i>	
	custom	<i>mineg</i>	<i>minhogim</i>	
	month	<i>xoydes</i>	<i>xadošim</i>	
	merchant	<i>soyser</i>	<i>sorrim</i>	
	murderer	<i>receyex</i>	<i>rocxim</i>	
	king	<i>meylex</i>	<i>mloxiim</i>	
	portion, share	<i>xeylek</i>	<i>xalokim</i>	
	seeder	<i>seyder</i>	<i>sdorim</i>	
	ignorant person	<i>amorec</i>	<i>ameracim</i>	
	Gentile (pej.)	<i>šegec</i>	<i>škocim</i>	
	prophet	<i>novi</i>	<i>nevijim</i>	
	way, means	<i>oyfn</i>	<i>oyfanim</i>	
	shy person	<i>bayšn</i>	<i>bayšonim</i>	
	friend, comrade	<i>xaver</i>	<i>xaveyrim</i>	
b.	house of study	<i>bes-medreš</i>	<i>bote-medrošim</i>	
	inhospitable person	<i>maxxes-oyrex</i>	<i>maxnise-orxim</i>	
	adulterer	<i>mexalel-ziveg</i>	<i>mexalele-zivugim</i>	
	only son	<i>ben-yoxed</i>	<i>bney-yexidim</i>	
c.	villain	<i>roše</i>	<i>rešoin</i>	
	rabbi of the Mishnah	<i>tane</i>	<i>tanoim</i>	

The examples in (4) are unusual in showing no stem changes; they appear to be straightforward cases of suffixation of *-im*. (18) makes clear, however, how much the singular and plural forms can differ. The examples in (18b), which have internal structure in the source language, have secondary stress on the first term but otherwise behave like irregular singular-plural alterna-

tions in Yiddish. Those in (18c) end in an unstressed vowel in the singular, but do not undergo (7a).

For all these examples, I propose a full suppletion analysis: The singular and plural forms are listed separately in the lexicon, the former marked [–pl] and the latter [+ pl]. There is no reason to posit a suffix *-im*.<sup>11</sup> Given this analysis and the disjunctive ordering principle, the fact that the plural forms in (18) are marked [+ pl] will block the application of the regular plural rules in (7).

The full suppletion analysis proposed for these Hebrew/Aramaic loans contrasts with the stem suppletion analysis proposed for ablaut, where the suppletive forms in the lexicon are stems that undergo inflection and diminutive formation. The reason for the different analysis comes from diminutive formation. (2) and (14) show that both singular and plural diminutive suffixes can attach to ablaut stems, which are unmarked for number. Forms like those in (18), however, are inflected for number, and only a diminutive suffix agreeing in number can attach to them. This analysis entails a treatment of the diminutive suffixes under which *-l* and *-ele* attach to singular forms, while *-lex* and *-elex* attach to plural ones. This is necessary to prevent diminutives like those in (19) instead of the correct forms in (17).

(19)	<i>*xoxemlex</i>	<i>*xaxomim</i>
	<i>*xosidlex</i>	<i>*xasidim</i>
	<i>*mayxllex</i>	<i>*mayxolim</i>

Let us now return to the consequences of this analysis for the split morphology hypothesis. The forms in (4) and (17) initially appeared problematic for the split morphology hypothesis on the assumption that they arise from plural suffixation prior to diminutive suffixation. Since plural forms ending in *-im* are listed as such in the lexicon, the forms in (4) and (17) are no problem for the split morphology hypothesis. They show a diminutive suffix on a lexical plural form.<sup>12</sup>

Parenthetically, it should be noted that another class of Hebrew/Aramaic loans presents somewhat different issues.

(20)	Sg	Pl
	<i>maškn</i>	<i>maškones</i>
	<i>korbm</i>	<i>korbones</i>
	<i>xolem</i>	<i>xaloymes</i>
	<i>lošn</i>	<i>leštoynes</i>
	<i>nicoxm</i>	<i>nictoynes</i>

<sup>11</sup>The fact that all these forms end in *-im* can be stated by a lexical rule. Nothing crucial to the concerns of this chapter hinges on whether this is done.

<sup>12</sup>I assume that *-lex* and *-elex* are unanalyzable plural diminutive suffixes. An alternative would be to posit a plural suffix *-ex* that attaches only to the diminutive suffixes *-l* and *-ele*, since no other forms (including those with other diminutive suffixes) have plurals in *-ex*. I do not see what would be gained under this alternative.

secret	sod	soydes
treasure	oyer	oycres
shofar	ṣoyfer	ṣoyfes
strength	koyex	koyxes
generation	dor	doyres
cup	kos	koyses
letter	os	oysyes
tablet	hex	luxes
disgrace	bizyon	bizyoynes

Since the singular-plural correspondences are irregular, the singular and plural forms must be listed separately in the lexicon, as with the examples in (18). Because the plural forms end in unstressed *e* followed by *s*, two analyses are available. Under the full suppletion analysis, they would be listed as inflected [+pl] forms like those in (18), for example, *mashkones*, *korbones*, *xaloymes*. Under the stem suppletion analysis, they would be listed as stems unmarked for number, for example, *mashkone-*, *korbone-*, *xaloyme-*, in which case, ending in an unstressed vowel, they would undergo the regular plural rule in (7a). (The situation therefore differs from that with the forms ending in *-im*, since the grammar already contains an extralexical rule to derive plurals in *-s* from stems ending in an unstressed vowel.)

Under the two analyses, the split morphology hypothesis makes different predictions about diminutives. The full suppletion analysis treats the forms in (20) like those in (18) and therefore predicts well-formed diminutives of the full plural forms, for example, *mashkoneslex*, *korboneslex*, *xaloymeslex*, like those in (4) and (17). The stem suppletion analysis derives the plural forms in (20) by extralexical application of (7a) and therefore predicts *mashkonelex*, *korbonelex*, *xaloymelex*. Unfortunately, the situation is not clear. The speakers I consulted rejected both types of diminutives for this class. However, Bochner (1984) cites several diminutives of the first type and one of the second as grammatical, based on the judgments of one informant. Additional research is needed to determine the status of these examples. Significantly, either state of affairs is consistent with the split morphology hypothesis, depending on how the plural forms are analyzed in individual speakers' grammars. Since different speakers might enter them differently, variation on this point would also be consistent with the split morphology hypothesis. (Without some additional device(s), the split morphology hypothesis would not account for speakers' systematically rejecting both types of diminutives of these forms.) In sum, Hebrew/Aramaic loan words like those in (4) and (17) are not problematic for the split morphology hypothesis. The singular-plural alternations are so irregular that they must be treated as suppletion. Under the full

## 6. Conclusions

The results of this study bear on the analysis of Yiddish, the treatment of suppletion and ablaut in morphological theory, and the split morphology hypothesis.

Internal to Yiddish, we have seen that there is evidence to treat both ablaut and the singular-plural alternations in many Hebrew/Aramaic loan words as suppletion in the lexicon. Instead of the traditional nine classes (*-s*, *-en*, *-er*, *ø*, ablaut, ablaut + *er*, *-ex*, *-im*, plus a class with irregular plurals), we posit (7) to derive the regular plurals in *-en* and *-s*, and lexical rules for the zero plurals and plurals in *-er*. We treat *-ex* as part of the diminutive suffixes. Other types are analyzed as suppletion in the lexicon. Ablaut is stem suppletion, while the Hebrew/Aramaic loans whose plurals are not derived by (7) are analyzed as full suppletion.

Our results support the distinction between stem suppletion and full suppletion. Ablaut illustrates stem suppletion: Ablaut stems are unmarked for number. They can therefore undergo plural inflection and occur with both singular and plural diminutive suffixes. Irregular Hebrew/Aramaic loans illustrate full suppletion. Since each form is marked for number, they cannot undergo plural inflection and can occur only with the diminutive suffix of the appropriate number.

Our treatment of ablaut differs from most earlier generative treatments,

<sup>13</sup> After presenting this paper at the Milwaukee conference, I became acquainted with Bochner, 1984, which concludes that the Yiddish data counterexemplify the split morphology hypothesis. Bochner's argument is based primarily on Hebrew/Aramaic plurals ending in *-im*, examples like those in (4) and (17), which, as we have seen, are consistent with the split morphology hypothesis. Bochner also presents an argument against one of Lieber's (1980) predictions that could bear on the split morphology hypothesis. The argument is based on adverbs ending in *-vayz*, e.g., *bislexvayz* 'bit by bit,' in which the plural form *bislex* is combined with *-vayz*. The crucial point is the appearance of plural inflection "inside" the derivational suffix *-vayz*. The only forms that could bear on the split morphology hypothesis are those in which a plural derived by (7) undergoes a rule of derivational morphology. Of the five forms with *-vayz* that Bochner cites, only two are relevant: *teylvayz* 'part by part,' and *ṣuresvayz* 'line by line.' The speakers I consulted would accept only the first. Further attempts to construct adverbs in *-vayz* on plurals derived by (7) met with failure. As far as I can determine, there is not a productive derivational rule sufficing *-vayz* to plurals derived by (7). Adverbs ending in *-vayz* seem to be sporadic and would therefore have to be listed individually in the lexicon. If this is correct, these forms present no problem for the split morphology hypothesis.

which exemplify different forms of the rule analysis. The study of German ablaut (umlaut) has revealed that it cannot be accounted for by a single rule applying uniformly in different morphological categories. For example, Robinson (1975) has argued that its generality has changed over time in different categories, and that its ordering relative to other rules (in low German dialects) varies in different categories. Janda (1982) shows that the phonological conditions on ablaut vary across categories, as does the class of vowels and diphthongs undergoing it.<sup>14</sup> He also shows that stems vary with respect to the categories in which they undergo or resist ablaut. Joseph and Janda (1986) cite German ablaut as an example of what they call a “rule constellation”—a “group of formally similar morphological processes sharing at least one characteristic property of form but distinguished by individual formal idiosyncrasies which prevent their being collapsed.” The problem is to capture what the various cases of German ablaut have in common while accounting for the data that prevent them from being collapsed into a single rule. Analyzing ablaut as stem suppletion, as proposed here, may offer a solution. With separate stems listed in the lexicon and related by lexical rules, it then remains to state the conditions on their distribution. The question of whether a solution along these lines is appropriate for German ablaut remains to be explored.

With respect to the split morphology hypothesis, we have seen that the examples in (2–4), which initially seemed to be counterexamples, are not problematic. The diminutives in (2) are formed not on plurals but on ablaut stems, those in (3) are formed on lexical plurals, and those in (4) are formed on fully suppletive plural forms. On the contrary, the Yiddish evidence supports the split morphology hypothesis. Forms in which a diminutive suffix follows one of the productive plural suffixes (*-en* and *-s*) due to the extralexical rule (7) are systematically impossible, as (8) and (16) show. This fact supports and is explained by the split morphology hypothesis.

Our results point to a characterization of the split morphology hypothesis based on two sets of criteria. Anderson's (1982) proposal that only syntactically relevant morphology can be extralexical is essential, for this is what assigns derivational morphology to the lexicon and makes only inflectional morphology eligible to be extralexical. At the same time, it is necessary to distinguish between two types of syntactically relevant morphology: irregular and closed-class inflection, which is in the lexicon, and regular, productive inflection, which is extralexical. This has elements in common with Lieber's (1980) proposals, from which it would follow that productive concatenative affixation will occur outside idiosyncratic and irregular affixation. However,

<sup>14</sup>There are also such differences in Yiddish. For example, in the comparatives and superlatives of adjectives, *oy* ablates to *e* (rather than to *ay* or *ey*) and *ey* (which does not ablaut in the noun morphology) ablates to *e*. However, *u* ablates to *i*, as in the noun morphology. We have ignored this because our study is limited to noun morphology.

Lieber does not make the distinction between derivational and inflectional morphology that is crucial to our results here and to Anderson's characterization of the split morphology hypothesis. We are therefore led to a characterization of the split morphology hypothesis with the following properties:

- (21) THE SPLIT MORPHOLOGY HYPOTHESIS
  - a. Derivational morphology is in the lexicon.
  - b. Stems are listed in the lexicon. Consequently, suppletive stems are listed in the lexicon.
  - c. Irregular and closed-class inflected forms are listed in the lexicon. Consequently, suppletive inflected forms are listed in the lexicon.
  - d. Regular, productive inflection is extralexical.
- (21a) and (21d) assume a distinction between inflectional and derivational morphology in terms of Anderson's distinction between rules that refer to morphosyntactic representations and those that do not. Given (21b) and (21c), the regularities holding among separately listed stems and inflected forms must be stated by lexical rules, as in the work of Jackendoff (1975), Lieber (1980), and others. (21b) and (21c) provide the basis for a theory of suppletion that distinguishes between stem suppletion and full suppletion. The evidence from Yiddish noun morphology supports a theory with these properties.

#### Appendix—On the Derivation of Diminutives

Nouns ending in a vowel or syllabic / fail to form first diminutives. This is easily accounted for if phonetically syllabic *n* and *r* are not syllabic but are still preceded by *schwa* at the point where the First Diminutive Rule applies. Then the rule can apply to nouns ending in a [–syllabic] segment:

- (22) FIRST DIMINUTIVE RULE
 
$$[X \text{ [–syll]}]_{N([+abl])} \rightarrow [X \text{ C } + ] \quad [+syll]$$

The specification “[*I*(+abl)]” ensures that for those nouns that have ablaut stems, only the ablaut stem can serve as input to (22). The more specific environment is the one containing the specification “[*I*+abl].” If a noun has a [*I*+abl] stem, then, (22) will apply to it. The disjunctive ordering principle will then prevent it from applying to the nonablaut stem.

Two epenthesis rules that apply in the environment created by the first diminutive suffix provide evidence that second diminutives are derived from first diminutives. The epenthized consonants also appear in second diminutives. (23) accounts for the fact that stems ending in *n* epenthezize a *d* before the first diminutive suffix.

diminutives in (24) and (26). The Second Diminutive Rule also accounts for the fact that in second diminutives the stress is always on the syllable immediately preceding the suffix *-ele*.

The effects of the two diminutive rules can also be seen in the diminutives of proper names that end in syllabic *l*:

(29)	Hershel	<i>herʃl</i>	1st dim	2d dim
	Rachel	<i>roxl</i>	* <i>roxlə</i>	* <i>roxle</i>
	Herzl	<i>hercl</i>	* <i>herclxл</i>	* <i>hercle</i>

(25) accounts for the fact that a *x* is epenthized before the diminutive suffix if the stem ends in *l*.

(25) X-EPENTHESIS

$\emptyset \rightarrow x/l \_ + l$

(26)	Sg	Pl	1st dim	2nd dim
	<i>moyl</i>	<i>maylor</i>	<i>moylxl</i>	<i>maylxle</i>
	<i>kol</i>	<i>keler</i>	<i>kelxl</i>	<i>kelxele</i>
	<i>teyl</i>	<i>teyh</i>	<i>teylxl</i>	<i>teyxle</i>

The epenthized consonants appear in second diminutives although these forms do not satisfy the epenthesis rules' environments; compare the presence of *d* in the second diminutives in (24) with its absence in *xanele* in (34). Further, a few nouns ending in *n* drop the *n* in the first diminutive, and it is absent in the second diminutive as well:<sup>15</sup>

(27)	Sg	1st dim	2d dim
	<i>boym</i>	<i>beyg</i>	<i>beygle</i>

All this indicates that second diminutives are derived from first diminutives. (28) accounts for this.<sup>16</sup>

(28) SECOND DIMINUTIVE RULE

[X V C <sub>O</sub> [+syll]] N[(+abl)] → [X V C <sub>O</sub> ele]
[+str]

The Second Diminutive Rule applies to forms ending in an unstressed syllabic segment, that is, a vowel or syllabic *l*, replacing the final syllabic segment with *-ele*. Except for the Second Diminutive Rule's stress requirement, the First and Second Diminutive Rules have complementary environments, but since the forms produced by the First Diminutive Rule end in syllabic *l*, the Second Diminutive Rule will apply to them, deriving the second diminutives. This accounts for the appearance of epenthetic *d* and *x* in the second

<sup>15</sup> These nouns must be marked as exceptional. The deletion of *n* will make (23) inapplicable.

<sup>16</sup> As with the First Diminutive Rule, this formulation assumes that *l* is syllabic, while *n* and *r* are not, at the point when this rule applies.

(30)	blackboard	<i>tovl</i>	Sg	Pl	1st dim	2d dim
		<i>tovlen</i>	<i>tevle</i>			

*Tovl* is in the category in (15); the ablaut stem *tovl* is used for diminutives but not for the plural. Since it ends in syllabic *l*, however, it cannot undergo the First Diminutive Rule. It does undergo the Second Diminutive Rule, which derives *tevle*. To prevent \**tovle*, the Second Diminutive Rule, like the First, must operate on the ablaut stem if there is one. The specification “[l + abl]” ensures this.

Since diminutives are formed on the ablaut stems of those nouns that have them, it might be thought that ablaut is conditioned by the diminutive suffix. There is evidence against this. First, by itself it would not account for the fact that, except for the small class in (15), the ablaut stem is also used to form plurals. Second, there are many examples in which the diminutive suffix does not condition ablaut. While most phonologically eligible nouns of Germanic origin have an ablaut stem, not all do:

(31)	tower	<i>turerm</i>	Sg	Dim
	valley, dale	<i>tol</i>	<i>tolv</i>	<i>tolxl</i>

shawl, scarf	šal	šalx/
cloud	volkn	vokndl/
warning signal	vorn	vornndl/
drop	tropn	tropl/

Ablaut does not occur in the Hebrew/Aramaic vocabulary:<sup>17</sup>

(32)	bridegroom	Sg	Sg dim
		xosn	*xesndl/
	smart person	xoxem	*xexamel/
	Chasid	xosid/	*xesidl/
	friend, comrade	xaver/	*xevel/
	pupil	talmid/	*telmid/
	body	guf/	*gifele
	gift	matone/	*matenele
	family	mišpoxe/	*mispoxele

  

(33)	smart people	Pl	Pl dim
		xaxomim	*xaxemimlex
	delicacies	mayxolim	*mayxelimlex
	sins	xatoim	*xateimlex

Proper names form diminutives productively, but without ablaut:<sup>18</sup>

(34)	David	doved	1st dim
	Hannah	xane	*devedl/
	Menachem	menaxem	*xenele
	Moyshe	moyše	*menexml/
	Broche	broxe	moyše
	Fruma	frume	*brexele
	Bluma	blume	frumele
			*blumele

Not all these names are of Hebrew/Aramaic origin, and *frume* is felt to be related to *frum* ‘pious,’ which has an ablaut stem in the comparative (*frimer* ‘more pious’). These facts argue against an analysis in which ablaut is conditioned by the diminutive suffix. They are consistent with our analysis, under which ablaut and nonablaut stems are listed in the lexicon.

<sup>17</sup>What is relevant is not a word’s historical origin but how it is treated by the grammar. For example, *ponim* ‘face,’ though of Hebrew origin, is treated by the grammar as Germanic. The plural *penimer* shows this in three ways: the ablaut stem, the *-er* suffix, and the fact that stress is on the initial syllable. Similarly, *nar* ‘fool,’ though Germanic in origin, is treated by the grammar as a Hebrew/Aramaic loan, as can be seen in the plural *naronim*, which ends in *-im* and has penultimate stress.

<sup>18</sup>I know of one exception to this generalization: *avrom* ‘Abraham,’ dim. *avreml*. These should probably be treated as distinct items, like English pairs such as *Henry-Hank*, *Richard-Dick*.

For ease of exposition the diminutive rules were formulated in (22) and (28) as deriving only singular diminutives, but they also derive plural diminutives—the First Diminutive Rule with the suffix *-lex* and the Second Diminutive Rule with *-elex*. Most nouns, which get their plurals by (7), are unmarked for number in the lexicon and therefore can undergo suffixation with either singular or plural diminutive suffixes. This also holds for ablaut stems, which are unmarked for number in the lexicon. Lexical plurals like *kinder* ‘children’ and *derner* ‘thorns’ are marked as plural in the lexicon and therefore can take only plural diminutive suffixes. Hebrew-Aramaic loan words whose plurals are not derived by (7) are marked for number; they can therefore be suffixed only with the diminutive suffix of the appropriate number. We leave open the question of what formal device is appropriate to ensure this.

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## Chapter 6

# Are Inflected Forms Stored in the Lexicon?

Joseph Paul Stemberger & Brian MacWhinney

Lexical items are a fundamental part of a speaker's knowledge of language. However, it is not always clear what items should be listed in the lexicon. There has been major disagreement in both linguistic theory and psycholinguistics over the status of inflected forms. Should all members of an inflectional paradigm be given separate entries in the lexicon? Or should there be only one entry for each paradigm, with the individual inflected forms being created by applying an inflectional rule to a base form? We examine this issue from a psycholinguistic perspective, bringing to bear data that we hope resolve this issue for language production. In addition to addressing the question of whether inflected forms are stored, we also address the question of how they might be stored.

Proposals about the representation of inflected forms fall into three main "generic" approaches. One approach is full suppletion: all inflected forms are stored in the lexicon as single units, as if they were monomorphemic (Leben and Robinson, 1977; Bybee, this volume). There may additionally be some form of redundancy rule that relates an inflected form to the other members of its paradigm and to other forms with the same affix. Regular and irregular forms are parallel in this approach, as in (1).

(1) {FREEZE} → /frouz// [+ past]	↓	/frizz/ elsewhere
{WALK} → /wa:k// [+ past]	↓	/wa:k/ elsewhere