21 The Dental Preterites in the History of English

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21.1 Introduction

Any shift of lexical items from one morphological class to another can be couched in terms of analogical change. Kiparsky (1965, 1988, 2000) has argued that analogical change has the result of grammar simplification. This chapter addresses a case of a morphological split in the English dental preterite that, if an instance of analogy, appears to have the opposite effect of complicating the grammar; we argue that, to the contrary, the change can be construed as phonological simplification when the grammar as a whole is taken into consideration.

The morphological split in question involves the past tense in Middle English (discussed, e.g., by Marckwardt 1935, Minkova and Stockwell 1998). While involving a single regular inflectional paradigm in Old English, past tense formation in Middle English requires weak verbs to be split into two groups, one regular and the other irregular. The division is clearly observable in Modern English.[1] In regular verbs (1a), there is no change in the root vowel. The past tense suffix is *d*, which assimilates in voicing to the root consonant (as in *reaped* [ri:pt]), or triggers the addition of [ə] if the root consonant ends in a coronal stop (as in *treated* [tri:təd]). In the irregular group (1b), the root vowel is shortened and the ending is a voiceless *t* (e.g., *kept* [kɛpt]), unless the root ends in a coronal stop, in which case there is no overt ending (e.g., *fed* [fɛd]).

(1) *Weak verbs in Modern English*

a. Regular:

PRES	ROOT VOWEL	PAST	ROOT VOWEL
moan	V̄	moaned [d]	V̄
heal	V̄	healed [d]	V̄
fill	V̆	filled [d]	V̆
reap	V̄	reaped [t]	V̄
beg	V̆	begged [d]	V̆
treat	V̄	treated [əd]	V̄
need	V̄	needed [əd]	V̄
tend	V̆	tended [əd]	V̆

b. Irregular:	PRES	ROOT VOWEL	PAST	ROOT VOWEL
	mean	V̄	meant [t]	V̆
	feel	V̄	felt [t]	V̆
	keep	V̄	kep [t]	V̆
	meet	V̄	met [Ø]	V̆
	feed	V̄	fed [Ø]	V̆
	hide	V̄	hid [Ø]	V̆
	send	V̆	sent [t]	V̆
	dwell	V̆	dwelt [t]	V̆

Distinguishing between these two past tense verb formation processes requires positing two different past tense suffixes in present-day English: /t/, accompanied by vowel shortening of the root, and /d/, with predictable assimilation in voice or insertion of schwa. The most convincing synchronic analysis of these patterns comes from the closed syllable account in Myers (1987b), who proposes that a bimoraic constraint is in force when the past tense suffix /t/ is added. Assuming lexical levels (Kiparsky 1982a, 1982b, 1985), the analysis (which is based on Myers 1987) would be as follows.

(2) *Closed-Syllable Shortening (CSS) in Modern English*

Level I: Present tense and past tense /t/ (irregular verbs)			
	keep+t	feed+t	meet+t
Extrametricality	keep⟨t⟩	feed⟨t⟩	meet⟨t⟩
CSS	kep⟨t⟩	fed⟨t⟩	met⟨t⟩
Coronal cluster simplification	——	fed	met
	[kɛpt]	[fɛd]	[mɛt]
	'kept'	'fed'	'met'

Level II: Past tense /d/ (regular verbs)				
	reap+d	beg+d	moan+d	need+d
[ə]-insertion	——	——	——	need[əd]
Voicing assim.	reap[t]	——	——	——
	[ri:pt]	[bɛgd]	[mo:nd]	[ni:dəd]
	'reaped'	'begged'	'moaned'	'needed'

It is only in the past tense that the two verb classes differ. There are no alternations when, for example, the 3P.SG suffix *s* is added. In both sets of verbs, the suffix consonant assimilates in voice to the preceding root consonant, and the surface forms are exactly parallel: *keeps* versus *reaps*; *feeds* versus *needs*; *meets* versus *treats*, and so on.

The evolution of the Modern English suffixes /t/ and /d/ is relatively new. The past tense suffix of Old English was /d/, and although there were alternations in the verbal paradigm, these were due to regular, transparent phonological processes such as *cēpan-cēpte* 'keep', *grētan-grētte* 'greet', *mētan-mēt* 'meet', where [d] assimilates in voice to the root consonant, or *fēdan-fēdde* 'feed', *fēlan-fēlde* 'feel', *hælan-hælde* 'heal', *fyllan-fylde* 'fill' with the degemination of underlying geminates in the verb stem.

The dual system characterizing Modern English, patently more complex than the simpler system in Old English, arose as the result of several changes, some analogical. We will argue that this apparent complication in the grammar of English can be understood as a process of grammar simplification if one assumes that neither phonological nor morphological analogy is to be interpreted only on the basis of surface forms but makes crucial reference to the entire grammatical system, including the status of lexical representations. The claim is that the split in the behavior of verbs like *heal*~*healed* and *feel*~*felt* is due to the fact that the Germanic dental preterite, precursor to the modern-day past tense suffix *d*, used to be analyzed on par with derivational endings and stem extensions (theme vowels) rather than as an inflectional suffix. As a result it was subject to a different set of constraints from those affecting person/number/mood inflections. Eventually, the preterite suffix split into two different suffixes: a voiceless stop, added at level I of the morphology, which had a more restricted use, and a voiced stop, added at level II of the morphology, which became the regular past tense.

This split is of particular interest in the context of the usual assumption in the grammaticalization literature in historical linguistics that affixes develop from clitics to unrestricted affixes to highly restricted affixes; the expectation in terms of level ordering would be that a level II affix would turn into a level I affix but not the reverse.

To support the proposed split in the English dental preterite, we first explore the synchronic status of the dental preterite in Old English (section 21.2) and then examine the subsequent changes from Old to Middle English (section 21.3).

21.2 Weak Verbs in Old English

In Old English, phonological alternations in the weak verbal paradigms depended on the weight of the roots. Light roots consisted of a short vowel followed by a single consonantal coda, while all the others were heavy. (As will be discussed below, phonological alternations, such as consonant gemination, can obscure the differences between light and heavy roots; see also Kiparsky and O'Neill 1976.) Most weak verbs were derived from nouns or adjectives by adding the derivational suffix /j/ to the root. Here we focus primarily on the class I weak verbs, whose root vowels are umlauted by the /j/ suffix. Their principal parts are listed in (3).

(3) *Old English class I weak verbs*

DERIVATIONAL SUFFIX /j/; INF /an/; 1P.PRES.SG /e/; 2P.PRES.SG /ist/; 3P.PRES.SG /iþ/; 3P.PAST.IND /de/

	LIGHT ROOTS		HEAVY ROOTS				
ROOT+/j/	/fram+j/	/din+j/	/cōp+j/	/fōd+j/	/fōl+j/	/hāl+j/	/full+j/
INFINITIVE	fremman	dinnan	cēpan	fēdan	fēlan	hælan	fyllan
1P.SG.PRES.IND	fremme	dinne	cēpe	fēdan	fēle	hæle	fylle
2P.SG.PRES.IND	fremest	dinest	cēp(e)st	fēd(e)st	fēl(e)st	hæl(e)st	fyll(e)st
3P.SG.PRES.IND	fremeþ	dineþ	cēp(e)þ	fēd(e)	fēl(e)þ	hæl(e)þ	fyll(e)þ
3P.PAST.IND	fremede	dinede	cēpte	fēdde	fēlde	hælde	fylde
GLOSS	'perform'	'resound'	'keep'	'feed'	'feel'	'heal'	'fill'

As seen in the table, there are several critical differences in the behavior of light and heavy roots.

a. In the infinitive and first person singular forms, final consonants of light roots undergo gemination, while final consonants of heavy roots do not.
b. In the past tense forms, a mid vowel (phonetically schwa) appears before the preterite /d/ in verbs with a light root but not in verbs with a heavy root.
c. In past tense forms with heavy roots, the preterite /d/ assimilates in voicing to the preceding, root-final consonant. This is the only context in Old English in which the coronal past tense marker is voiceless.
d. The suffix /j/ merges with the high vowels of *-ist* (2P.SG) and *-iþ* (3P.SG), blocking gemination. The resulting *i* is then lowered to *e* (phonetically schwa) as mentioned above in (b).

The critical phonological processes that govern these alternations are GEMINATION, HIGH VOWEL DELETION, GLIDE DELETION, DEGEMINATION, VOICING ASSIMILATION, and LOWERING. Crucial to an understanding of how these processes apply is the assumption that words are assigned an asymmetric resolved moraic trochee whose head must contain at least two morae (see Dresher and Lahiri 1991; Lahiri and Dresher 1999; Lahiri et al. 1999). We illustrate this trochee in the following examples, where the HEAD of the foot is marked in square brackets.

(4) *Old English resolved moraic trochee*

(x)	(x .)	(x .)	(x .)
([μ μ])	([μμ] μ)	([μ μμ] μ)	([μ μ] μ)
ho fu	wor da	fæ rel de	æ þe le
'dwelling NOM.PL'	'word GEN.PL'	'journey DAT.SG'	'noble NOM.SG'

We now proceed to talk in turn about each of the phonological alternations mentioned above. The first is SYLLABIFICATION, which is responsible for vocalizing the glide /j/ between consonants and deleting it before (or merging it with) /i/.

(5) *Syllabification*
A parsing procedure (rather than a phonological process) that applies continuously at each level. Requires all segments to be syllabified and remedied according to language-specific constraints.

Old English glides are vocalized when consonants follow, and a /ji/ sequence is modified to /i/. Unsyllabifiable final glides can remain until the word level, when they must also be vocalized. Onset maximization based on the sonority hierarchy is preferred.

Syllabification bleeds gemination, in which suffixal /j/ assimilates to the preceding root-final consonant, producing a geminate.

(6) *Gemination (gem)*
C_i+/j/ → C_iC_i
($C_i \neq$ [r]); blocked if the result is a trimoraic head.

Gemination fails in two circumstances: when the root-final consonant is /r/ or when a trimoraic head would result. In these situations the /j/ is retained.

Examples illustrating gemination are given in (7) for both verbs and nouns. The nouns belong to the *ja*-class and thus /j/ comes between the stem and the case and number suffix.

(7) *Constraining gemination in Old English*
a. *Gemination permitted*[2]

‘perform 1p.sg’		‘desert dat.sg’	
fremme /frem-j-e/		*wēstenne* /wēsten-j-e/	
(x)	(x .)	(x .)	(x) (x .)
([μ μ])	([μμ] μ)	([μμ] μ) μ	([μμ]) ([μμ] μ)
fre mje >	frem me	wē ste nje >	wē sten ne

b. *Gemination blocked to prevent trimoraic foot head*

‘moan 1p.sg’		‘noble dat.sg’	
mǣne /mǣn-j-e/		*æþele* /æþel-j-e/	
(x .)		(x .)	
([μμ] μ)	*([μμμ] μ)	([μ μ] μ)	*([μ μμ] μ)
mǣ nje >	*mǣn ne	æ þe lje >	*æ þel le

Gemination freely applies to /frem-j-e/ and /wēsten-j-e/ since the resulting long consonant does not make the head of the foot trimoraic. In /wēsten-j-e/ → *wēstenne*, the foot structure has changed, but the head of the initial foot remains bimoraic. On the other hand, after gemination /mǣn-j-e/ would become *mǣn.ne*, with a trimoraic head **mǣn*, and hence gemination is blocked. The same holds true for *æþele*.

Glides to which gemination does not apply are subject to further alternations, depending on what suffixes follow; when final, /j/ is treated as an appendix and left unsyllabified until the word level, where it gets vocalized. Examples will be provided below.

In addition to SYLLABIFICATION and GEMINATION there are three vowel/glide-related phenomena: DELETION, LOWERING, and UMLAUT.

(8) *Vowel/Glide-related phenomena*
   a. *HIGH VOWEL DELETION (HVD)*
      High vowels are deleted in the weak branch of a foot.
   b. *LOWERING (LOW)*
      Unstressed high vowels are lowered.
   c. *UMLAUT (UML)*
      Vowels are fronted before /i/ and /j/ (later shown to be level I).

In addition, DEGEMINATION applies as a filter when geminates happen to occur before a consonant or after a long vowel.

(9) *DEGEMINATION (DEGEM)*
   Geminates in a closed syllable when preceded by a long vowel or followed by another consonant are degeminated. Word-final geminates are also degeminated.[3]

These alternations are illustrated by the examples in (10), in which SYLLABIFICATION (along with foot structure), HIGH VOWEL DELETION, LOWERING, and DEGEMINATION are shown applying to several verbs. UMLAUT is assumed to have already applied.

(10) a. *mǣnde* 'moan 3P.PAST.IND'

		(x	.)			
/mǣn-j-d-e/	>	mǣ	ni de	>	mǣn de	
		SYLL			HVD	

   b. *fremede* 'perform 3P.PAST.IND'

		(x	.)			
/frem-j-d-e/	>	fre	mi de	>	fre me de	
		SYLL			LOW	

   c. *cēpeþ* 'keep 3P.SG.PRES'

		(x)	(x)			
/cēp-j-iþ/	>	cē	piþ	>	cē peþ	
		SYLL			LOW	

   d. *fylde* 'fill 3P.PAST.IND'

		(x	.)					
/fyll-j-de/	>	fyl	li de	>	fyll de	>	fyl de	
		SYLL			HVD		DEGEM	

   e. *mǣne* 'moan 1P.SG.PRES'

		(x	.)			
/mǣn-j-e/	>	mǣ	ni e	>	mǣn e	
		SYLL			HVD	

Given the existence of DEGEMINATION, one might argue that GEMINATION should apply everywhere without constraint and that the DEGEMINATION sorts things out later. That is, *mǣne* 'mean' (1P.SG.PRES) would go through the following steps: /mǣnje/ > *mǣnne* (GEM) > *mǣne* (DEGEM). However, evidence from *ja*-nouns proves that this cannot be the case. For *ja*-nouns the nominative singular suffix is null, with surface forms like *wīte* 'punishment' coming from /wīt-j-Ø/, or *cynn* 'race' from /cyn-j-Ø/. The final *e* in *wīte* comes from the vocalized /j/, which is retained since it is word final and remains as an appendix till the very end. Allowing GEMINATION to apply freely and absorb the /j/ would incorrectly predict DEGEMINATION to delete all trace of /j/, yielding derivations like /wīt-j-Ø/ > wītt (GEM) > **wīt* (DEGEM). The correct analysis is /wīt-j-Ø/ > *wīt(j)* (GEM blocked, /j/ retained at word edge) > *wīti* (SYLL) > *wīte* (LOW).

The deletion of /j/ in the context of a high front vowel (GLIDE DELETION), which accounts for derivations like /frem-j-iþ/ 3P.SG.IND > *fremiþ* (*/ji/ > i) > *fremeþ* (LOW), bleeds GEMINATION: /frem-j-iþ/ > **fremmiþ* > **fremmeþ*.

21.3 The Dental Preterite

We now demonstrate how the various phonological phenomena discussed thus far affect the realization of the dental preterite. Until now we have operated as though all suffixes in Old English—derivational /j/, past tense /d/, person/number suffix—are added to the root simultaneously. It will be assumed in this section, however, that derivational and inflectional suffixes are added at different, ordered levels (levels I and II) and that the dental preterite is added at level I, along with derivational suffixes, rather than at level II, with the inflectional suffixes. A similar position is taken, for Old High German and Old Norse, in Lahiri (2000b); Kiparsky and O'Neill (1976) also treat /d/ differently from person/number suffixes, though this does not play a crucial role in their derivations.

The evidence for the separation into different suffixational levels comes from the fact that various rules like umlaut operate on an independent domain that includes the stem extensions /j/, /i/, and /d/ but not the true inflectional suffixes. Dresher (1993, 331–333) makes this argument convincingly for the Old English dialect Mercian on the basis of rules like UMLAUT and BREAKING. Compare the 3P.SG.PRES forms of the strong verb *haldan* 'hold' and the derived weak verb *onhældan* 'lean down' below, based on a derivation from Dresher 1993 (p. 331). The weak verb undergoes UMLAUT, triggered by the derivational suffix *-j* at level I; the rule does not apply at level II, where the /i/ is added as part of the agreement suffix in /hæld-iþ/.

(11)

	Weak verb	*Strong verb*
	/on-hald-j-iþ/	/hald-iþ/
UML level I	onhældeþ	haldeþ

The following derivations illustrate the dental preterite being added to the root, along with /j/, at level I, independent of the person/number or case/number suffixes, which are added at level II. The phonological rules are as discussed above, with the addition of a rule of VOICING ASSIMILATION, which devoices the dental preterite following a voicelesss root-final consonant at level II. Parentheses indicate unsyllabified material, which is resolved (when necessary) at the word level.

(12) *Weak verbs: 1P.SG.PRES (root*-j-e*) and 3P.PAST (root*-j-d-e*)*

Level I	PRESENT				PAST			
INPUT	fram+j	nar+j	cōp+j	full+j	fram+j+d	nar+j+d	cōp+j+d	full+j+d
SYLL	fram(j)	nar(j)	cōp(j)	full(j)	fra.mid	na.rid	cō.pid	ful.lid
UML	frem(j)	ner(j)	cēp(j)	fyll(j)	fre.mid	ne.rid	cē.pid	fyl.lid
Level II	1P.SG				3P.PAST			
INPUT	fremje	nerj+e	cēpj+e	fyllj+e	fremid+e	nerid+e	cēpid+e	fyllid+e
SYLL	——	ne.rje	cē.pi.e	fyl.li.e	——	——	——	——
GEM	frem.me	——	——	——	——	——	——	——
HVD	——	——	cēpe	fylle	——	——	cēpde	fyllde
DEGEM	——	——	——	——	——	——	——	fylde
VOI.ASS	——	——	——	——	——	——	cēpte	——
LOW	——	——	——	——	fremede	nerede	——	——
	fremme	nerie	cēpe	fylle	fremede	nerede	cēpte	fylde

(13) *Weak verbs: 3P.SG.IND (root*-j-iþ*) and past participle (root*-j-d*)*

Level I	PRESENT			PAST		
INPUT	fram+j	cōp+j	full+j	fram+j+d	cōp+j+d	full+j+d
SYLL	fram(j)	cōp(j)	full(j)	framid	cōpid	fullid
UML	frem(j)	cēp(j)	fyll(j)	fremid	cēpid	fyllid
Level II	3P.SG			PARTICIPLE		
INPUT	fremj+iþ	cēpj+iþ	fyllj+iþ	fremid	cēpid	fyllid
SYLL	fre.miþ	cē.piþ	fyl.liþ	——	——	——
GEM	——	——	——	——	——	——
HVD	——	——	——	——	——	——
DEGEM	——	——	——	——	——	——
VOI.ASS	——	——	——	——	——	——
LOW	fremeþ	cēpeþ	fylleþ	fremed	cēped	fylled

The nominal forms in (14) provide additional support for the formulation of the different processes.

(14) ja-*nouns:* NOM.SG *(root*-j-Ø*) and* NOM.PL *(root*-j-u*)*

Level I	NOUNS							
INPUT	cun+j	wīt+j	wēsten+j	aþel+j				
SYLL	cun(j)	wīt(j)	wēsten(j)	aþel(j)				
UML	cyn(j)	——	——	æþel(j)				
Level II	NOM.SG				NOM.PL.NEUT			
INPUT	cynj+Ø	wītj+Ø	wēstenj+Ø	æþelj+Ø	cynj+u	wītj+u	wēstenj+u	æþelj+u
SYLL	——	——	——	——	——	wītiu	——	æþeliu
GEM	cynn	——	wēstenn	——	cynnu	——	wēstennu	——
HVD	——	——	——	——	cynn	wītu	wēstenn	æþelu
Word level								
DEGEM	cyn	——	wēsten	——	cyn	——	wē.sten	——
SYLL	——	wīti	——	æþeli	——	——	——	——
LOW	——	wīte	——	æþele	——	——	——	——
	cyn	wīte	wēsten	æþele	cyn	wītu	wēsten	æþelu

Note that in both levels I and II, the fate of final, unsyllabifiable material is left up to the phonology of the subsequent level. For example, final unsyllabified glides not absorbed by GEMINATION in level I remain unsyllabified (as in /fyll(j)/ in (12) and /wītj/ in (13)), pending potential later suffixation at level II. Glides that are still final, and unsyllabified, in level II are vocalized (and lowered) at the word level, when no further suffixation is possible (e.g., *wīte*, in (13)). DEGEMINATION operates in a similar manner.

The numerous phonological alternations we have discussed result in many instances of ambiguity or opacity. For example, the NOM.SG *wītu* (< */wīt-j-u/*) is opaque with respect to HIGH VOWEL DELETION, which deletes the vocalized glide /i/ but not the plural suffix /u/. GEMINATION produces a situation of near ambiguity between the present tense forms and the infinitive forms of light roots, on the one hand, and heavy roots with underlying long consonants, on the other. Except in in 2/3P.SG (cf. *cysse* versus *teme*), these two root types behave indistinguishably; cf. *cyssan* 'to kiss', *stillan* 'to still', *pyffan* 'to puff', *fyllan* 'to fill', which have underlyingly geminate consonants, versus *temman* 'to tame', *clynnan* 'to sound', *dynnan* 'to make a noise', whose geminates are derived. It is often only the comparision between present and past tense forms of a verb that reveals whether the root is underlyingly heavy or not. For instance, the language learner can figure out that *fylde* must have an underlyingly heavy root, since otherwise the glide /j/ would surface as a low vowel, yielding **fylede* like *temede*.

Note particularly the difference between the past participial forms *fremed*, *cēped*, *fylled* (13) and the 1P.SG.PAST.IND forms *fremede*, *cēpte*, *fylde* (12). Because of the

differences in foot structure, HVD applies in *fylde* (< /fylide/) and *cēpte* (< /cēpide/) but not in *fylled* (< /fyllid/) or *cēped* (< /cēpid/); only in the former set of forms is the high vowel in the weak branch of a foot. As a result, *fylled* maintains its underlying geminate and *cēped* has no opportunity to undergo VOICING ASSIMILATION. These differences between the past indicative forms and the past participle play an important role in the Middle English developments.

21.4 Old to Middle English

In this section we address the development in Middle English in which the dental preterite eventually splits into two suffixes, *-t* and *-əd*, the first having a closer affinity to the root and the second behaving like a regular inflectional ending, as in the other Germanic languages. We argue that these changes are motivated by the addition of several phonological rules in Middle English. The following observations characterize the changes in the behavior of heavy roots.

a. Vowel quantity alternations appear in Late Middle English, with some past tense forms (*cepte*, *felde*, etc.) exhibiting short vowels. This process of vowel shortening counteracts a regular process of vowel lengthening before voiced homorganic clusters, particularly *-ld*, *-nd*, and *-mb*, which was introduced in Late Old English, as in *wēlden* 'to wield' and *fēld* 'field'. Long consonants as in *fillen* were real geminates.
b. The preterite is manifested as [t] after sonorants, starting in Late Middle English, in just those verbs with the new short vowel in the past, such as *felte*. (After medial [ə], as in *hēled*, the preterite consonant remains voiced; that is, *[ət] was never attested.)

Table (15) illustrates the changed situation for verbs with heavy roots in Early and Late Middle English.[4]

(15) *Class I alternations (original heavy roots)*

INFINITIVE		PAST		GLOSS
OE	ME	OE and Early ME	Late ME	
cēpan	cēpe(n)	cēpte	cepte	'keep'
fēdan	fēde(n)	fēdde	fedde	'feed'
fēlan	fēle(n)	fēlde	felde (*later* felte[5])	'feel'
mētan	mēte(n)	mētte	mette	'meet'
fyllan	fille(n)	filde	filde	'fill'
dēman	dēme(n)	dēmde	dempte (*later* deemed)	'deem'
hǣlan	hǣle(n)	hǣlde/hēlde	hēled	'heal'

A similar argument can be made on the basis of the behavior of Middle English verbs with light roots. Examples are shown in (16) (forms marked with ‡ are hypothesized).

(16) *ME alternations (original light roots)*

OE		Early ME		Late ME		
INFINITIVE	PAST	INFINITIVE	PAST	INFINITIVE	PAST	GLOSS
fremman	fremede	fremmen/fremen	fremede	‡frēme	frēmed	'perform'
werian	werede	werien	werede	wēre	wēred	'defend'
styrian	styrede	stirien	stirede	stire	stired	'stir'
dynnan	dynede	din(n)en	dinede/dīned	dinne	dinned	'resound'
trymman	trymede	‡trymmen	‡trymede	trimme	trymmed	'strengthen, trim'

The new process of OPEN SYLLABLE LENGTHENING is evident in these data, applying in the past tense forms of verbs with light roots (see also Lahiri and Dresher 1999; Lahiri and Fikkert 1999; Fikkert et al. 2006), for example, OE *fremede* > ME *frēmed*.

The lengthy literature on the split in behavior in the dental preterite, illustrated above, contains several possible explanations. For example, it has been suggested that the use of [t] in the preterite is an extension of the OE 3P.SG (thus *sendeþ* > *sent*) (Morsbach 1896) or was borrowed from verbs like ME *cepte* (Moore and Marckwardt 1951). What remains unexplained, however, is why the [t] was extended only to the class of heavy roots, even when the roots ended in a sonorant (cf. ME *felte* > *felte*) class. The loss of the final schwa in the original trisyllabic past tenses like *fremede* > *frēmed* is also unclear, as is the absence of intermediate forms like **frēmede*. Brunner (1960), taking a pessimistic attitude toward these explanations, simply says that the reasons for these changes are not quite clear.

It is claimed here that the split in the dental preterite follows from the phonological changes that occurred in Middle English. Below is a list of the principal components that led to the split of preterite /d/ into two separate preterite morphemes, /t/ and /d/, the first remaining a level I suffix, and the second becoming a level II suffix, resulting in present-day alternations like *feel – felt* versus *deem – deemed*.

a. The innovation of OPEN SYLLABLE LENGTHENING produces a long initial stem vowel in original light syllables (e.g., *wēred*).
b. TRISYLLABIC SHORTENING (Lahiri and Fikkert 1999), which shortens antepenultimate stressed long vowels, ensures the absence of a medial stage like **frēmede*; additionally, there was a later tendency for trisyllabic words with three light syllables to become disyllabic: *fremede* > *frēmed*, *stirede* > *stired*.

c. Because the OE rule of HIGH VOWEL DELETION had never applied to light roots, such roots exhibited a tendency to end in *-ed* rather than *-de*, thus *stired* < OE *stirede* rather than **stirde*, but *felde* < OE *fe:lde* /fe:lide/.
d. Original heavy roots ending in sonorants went in two directions; some began to exhibit vowel alternations in the present and past. Verbs like *fēlan* ~ *fēlde* > *felde* ('feel' ~ 'felt') exhibited vowel shortening in the past, but not with *hǣlan* ~ *hǣlde* > *hēled* ('heal' ~ 'healed'). When the long vowel was maintained in the past, the ending was *-ed*.
e. The vowel shortening in the past tense is often attributed to a special case of Closed-Syllable Shortening (see, e.g., Morsbach 1896; Moore and Marckwardt 1951; Jespersen 1961; and many others), although vowels before other homorganic consonant clusters like *ld*, *nd*, *-mb*, and so on, were usually lengthened, as in *wēlden* 'to wield' and *fēldes* 'field-GEN'.
f. Heavy roots ending in voiceless stops also underwent VOWEL SHORTENING, and maintained the surface suffix *-te*: *cēpte* > *cepte*, but *cēpan*.
g. The voiceless suffix is later used also for the past of sonorant roots but only when the root vowel is shortened: *fēlde* > *felde* > *felte* > *felt*, but *hǣlde* > *hēled* > *healed*.
h. At no point was there a possibility for the suffix to be **-et*, regardless of the weight of the root.

One important factor is the opacity the interacting processes introduced into the system. OPEN SYLLABLE LENGTHENING applied to light roots, obscuring the original weight distinction; also as a result of OPEN SYLLABLE LENGTHENING, GEMINATION, which in Old English had served to distinguish light and heavy roots, no longer applied transparently, and therefore even more evidence for the distinction between light and heavy roots was lost. This had consequences for the analysis of the preterite. While in Old English the surface distribution of the three allomorphs of /d/ ([t], [d], [əd]) was entirely predictable from root weight and verb class, in Middle English the conditions in which they appeared became more arbitrary. Dialectal differences and changes in verb class contributed further to this arbitrariness, setting the stage for a reanalysis of the preterite allomorphy.

Middle English did still exhibit three consistent differences between the light and heavy roots. In the original light roots (cf. (16) and (17c)), regardless of whether the root vowel became long in an open syllable in the past tense (*frēmed*) or whether the geminate consonant was retained (*dinned*), there was no syncope of the medial unstressed vowel *e* (from original OE /j/ > [i] before /d/) even in Late Middle English. Thus, regardless of original weight distinctions becoming opaque and regardless of dialectal differences, original Old English short roots always had a full syllabic *-ed* in the past tense, a situation that continued for quite a while in Middle English, as

in *stired* (see Moore and Marckwardt 1951; Minkova 1991; Lass 1992), even when the root vowel was lengthened. By contrast, verbs formed from heavy roots exhibited past tense forms both without syncope (*hēled*), as well as with syncope when ending in *-de* (*fedde*) or in *-te* (*cepte*).

There was also a difference in the final vowel, which was lost in verbs with light roots (see (16)) that were originally trisyllabic in the preterite (*stirede* → *stired*) but, even in Late Middle English, was preserved in verbs with heavy roots (e.g., *cepte*; see (15)).

A third crucial difference between the original light and heavy roots in Middle English involves the preterite /d/. While heavy roots can show up with a final /t/, the original light roots never do, a situation that has been maintained in Modern English, where one finds past tenses of original light root verbs like *stirred* and *tamed*, but none with a final [t].

Our claim is that the opacity introduced by the phonological changes detailed above caused the dental preterite to be ambiguous in its pattern of alternations. The language learner was faced with competing hypotheses, and for the reasons detailed below, this led to a split such that for some verbs like *feel*, the preterite was still used as an indicator of verb class, functioning therefore more like a derivational level I suffix, while for others it was treated as a level 2 inflectional ending.

The following scenario sketches the history of the reanalysis. The first step occurred when the verb-deriving suffix /j/ became opaque and was no longer productive. In OE, which had alternations like *fremman|fremede* versus *fyllan|fylde*, along with the short roots in /r/, which did not geminate as in *werie(n)|werede*, the suffix was entirely transparent. However, when OPEN SYLLABLE LENGTHENING became active in Middle English, obscuring the difference between light and heavy roots, and the final schwa in trisyllabic words was lost, the language learner was confronted with alternations like *wēre(n)|wēred* versus *dēme(n)|dēmde* and *dinne(n)|dīned|dinede* versus *fylle(n)|fylde*. Further, words like OE *temman*, which had been reanalyzed as another class of weak verbs without gemination, now inflected as *tēme(n)|tēmed*. The point is that gemination was no longer synchronically predictable.

The main reason for the morphological split was the conflicting alternations confronting the language learner as a result of the phonological behavior of the verbs with original light roots. Some had become long by OPEN SYLLABLE LENGTHENING (e.g., *wēre(n)|wēred*), while others geminated in the present and alternated in length in the past (e.g., *dinne(n)|dīned|dinede*). The interaction between OPEN SYLLABLE LENGTHENING and TRISYLLABIC SHORTENING meant that past tenses like **wērede* and **dīnede* would not occur. Either the vowel was lengthened and the final vowel was deleted or the trisyllabic form remained with an initial short vowel. Gradually the trisyllabic forms became less preferred.

(17) *Alternations confronting the language learner in Late ME*

ROOT	PAST	INFINITIVE
LONG V	hōped	hōpe
LONG V	felde	fēle
LONG V	cepte	cēpe
SHORT V	stired	stire
GEM	dinede/dīned	dinne
GEM	fylde	fylle
GEM	wedded	wedde

Speakers analyzing present-past alternations like *dinne* ~ *dinede/dīned* were faced with a choice of postulating a geminated root where the consonant in the past was also long (like *trimme* ~ *trimmed*), or a root that undergoes OPEN SYLLABLE LENGTHENING in both the past and the infinitive (*hōpe* ~ *hōped*). Given these alternations, no consistent phonological analysis was possible assuming a single preterite suffix. However, a systematic pattern of alternations was still possible by assuming two distinct preterite suffixes: *-ed* and *-d*, which surfaces as *-de* or *-te* with inflection.

(18) *Reorganized pattern of alternations based on the preterite suffix*

SUFFIX	ROOT+SUFFIX ALTERNATION	ROOT	PAST	INFINITIVE
-d(e)/-t(e) (level 1)	V̆C-de	LONG V	felde	fēle
	V̆C-te	LONG V	cepte	cēpe
	V̆C-de	GEM	fylde	fylle
-ed (level 2)	V̄C-ed	LONG V	hōped	hōpe
	V̆CC-ed	GEM	wedded	wedde
	V̆C-ed	SHORT V	stired	stire
	V̄C-ed	GEM	dinede/dīned	dinne

The bifurcation of the dental preterite meant that the /d/ suffix on level I was now added directly to the root (there being no longer an intervening derivational /j/). Level I preterites were subject to root-level constraints like *VVCC, a ban on VVCC roots already applicable in Old English (and a factor in blocking GEMINATION). Now extended to the root plus preterite /d/, *VVCC led to vowel shortening in the past tense.[6] In contrast, the inflectional suffix /-əd/ was added in level II and was not subject to any such constraint. The situation after the morphological split was as follows.

(19) *Preterite in Late Middle English*

	PRESENT				PAST			
Level I	PRESENT					PAST /d/		
	dēm	fēl	cēp	fyll		fēl+d	cēp+d	fylld+d
*VVCC	——	——	——	——	——	feld	cepd	——
Level II	1P.SG /e/				1P.SG /əd/	1P.SG /e/		
	dēm+e	fēl+e	cēp+e	fyll+e	dēm+əd	feld+e	cepd+e	fylld+e
DEGEM	——	——	——	——	——	——	——	fylde
V-ASSIM	——	——	——	——	——	——	cepte	——
	dēme	fēle	cēpe	fylle	dēmed	felde	cepte	fylde
Mod.E	'deem'	'feel'	'keep'	'fill'	'deemed'	'felt'	'kept'	'filled'

It is level I /d/ that has come down to Modern English as the "special past" marker /t/ as found in *felt*. Thus, at the next stage of the language, after there had already been a split between the two past tense markings, the level I suffix became underlying /t/. Development of voiceless /t/ depended on the loss of unstressed schwas in the 1P.SG, resulting in forms like *cept*, *lovd*. (Schwas were retained only after coronal stops, as in *hunted*.) The loss of unstressed schwas also led to assimilation in level II, producing forms like *hōpt*.

Moore and Marckwardt (1951) observe that the /t/ was generalized based on words like *cepte*; the question, however, is why. The explanation offered here is that it had become necessary to unambiguously mark the difference between the two past tenses, whose distribution was no longer transparent. By the time of the loss of the schwa, the original light verb roots had either been restructured as having an underlyingly long vowel (e.g., *hōp*-) or an underlying geminate (*dinn*-), which later degeminated. The past suffix assimilated to the root with the loss of schwa and forms like *hōpt* surfaced from *hōped*, clashing with forms like *cept*. That is, the surface forms did not reflect the difference between *hōp(e)* ∼ *hōped* > *hōpt* and *cēp* ∼ *cept*. One way of distinguishing the suffixes was to keep the underlying forms apart (i.e., not just allomorphs)—one suffix as /d/ and the other as /t/, introducing a distinction between *-ed* and *-t* with root-final sonorants, as in *felt* versus *healed*.

Another important reason for /t/ to be the special plural morpheme was that the only source for preterite /t/ was assimilation to root-final voiceless consonants in heavy roots that could later be shortened, as in *cept*. Thus, /t/ was always associated with vowel shortening and could be easily interpreted as indicating the special status of the level I suffix.

Our analysis of the splitting of the dental preterite into two suffixes and the eventual shortening root-internal in the context of the level I /d/ has support from several sources. First, vowels that were lengthened in Late Old English before voiced homorganic clusters (see above) did not shorten with level II inflections: ME *fēld*, *fēldes*

'field'; *grūnd*, *grūndes* 'ground'; or in disyllabic adjectives like *wīlde* 'wild'.[7] Neither did shortening apply in verb roots that ended in these clusters: *hōld*, *fīnd*, and so on. Original Old English long vowels in this context retained their length as in OE *fēonda* 'fiend', but again not in certain weak verbs such as OE *mǣnde* 'meant'. Thus, the past tenses with shortened vowels that were created by the level I /d/ were certainly different. They pattern with other level I suffixes that cause shortening such as *wide* ~ *width*, or other level I constraints like trisyllabic shortening as in *child* ~ *children*, *wild* ~ *wilderness* (see Lahiri and Fikkert 1999).

Second, there was no shortening in the past participle, which was simply the earlier /d/ later restructured to /əd/. The surface forms never changed: *fēled*, *dined*, *dēmed*, *cēped* (see (13)). According to our analysis, in Old English, the past participle forms would be identical to the past, except that HIGH VOWEL DELETION would not apply since the high vowel was in a closed syllable rather than in a weak branch of a foot: /dēm-j-d/ > *dēmid* (no HVD) > *dēmed* (LOWERING) (cf. past *dēmde*). This is also why VOICING ASSIMILATION did not apply (*cēped*; cf. *cēpte*). In Middle English, when the past participle generally was restructured to /əd/, it caused neither shortening nor VOICING ASSIMILATION. Only later when the past and past participle merged did the root vowel shorten.

A third argument supporting /d/ as a separate suffix from the person/number endings comes from other inflected forms. Neither the consonantal second or third person singular suffixes *st* and *þ* had this effect, as seen below.

(20) *Lack of vowel shortening with other inflectional endings*[8]

OE	3P.SG cēp(e)þ > ME cēpþ, cēpəþ 2P.SG cēp(e)st > ME cēpst, cēpəst	cf. English 'keeps'
OE	3P.SG.fēl(e)þ > ME fēlþ, fēləþ 2P.SG.fēl(e)st > ME fēlst, fēləst	cf. English 'feels'

Note that in some dialects (e.g., the Midland dialects and, especially, the Northern dialects), the second and third person singular endings were preceded by schwa (*ə*) (Wright and Wright 1928, sec. 150), which could be taken as the reason that these endings behaved differently from the preterite /d/. However, not all dialects show schwa. In the Southern dialects, the ending was usually [þ]. Even in the Midland dialects, presence or absence of schwa was conditioned. After heavy roots, the absence of schwa was more frequent in the Midland dialects than after light roots. Thus, in both the Southern and the Midland dialects, *fēlþ* would have been a more frequent form than *fēləþ*. In any event, there was no vowel shortening in the third or second person singular even in dialects where the ending clearly lacked [ə]. That is, in the Southern dialects, alternations like *fēle(n)* INFINITIVE, *fēlþ* 3P.SG, *felde* PAST (> *felte*) occurred regularly. Thus it can be said with certainty that a segmentally similar consonantal inflectional ending did not have the same effect as the preterite.

The splitting up of the preterite had the effect that many verbs changed classes in the course of the history of English, usually from being originally level I to becoming level II. Curme (1935) gives a detailed list of the various past and participle forms of weak verbs at different stages. But neither the shift nor the initial division was random. What is interesting is that the general tendency was for long roots that took the level I suffix to take the level II suffix or in other words to become "regular." According to our analysis, the split was generally based on the original weight of the root and syncope of the vowel. The crucial contrasts were *dēmde* versus *wēred*. The original light verbs with gemination (*fremmen*) or a long initial vowel (*wēren*) always took the past *-ed*, and when the split took place, according to our analysis, these verbs were all treated as level II and therefore ought to have been treated at a later period as "regular." This was indeed the case.

Finally, since all verbs that now take the level I suffix /t/ originally came from the class I weak verbs, they were always umlauted. Consequently, synchronically English has only front vowels in roots that take the /t/ suffix.

21.5 Conclusions

In sum, there is a host of evidence suggesting that the Old English dental preterite split into two different inflectional suffixes. Our claim is that this split could not have occurred had it not been the case that the dental preterite marker was a suffix on par with derivational suffixes and stem extensions, marking a particular class of verbs. The chronology of this evolution of the weak past is summarized below.

(21) *Evolution of the weak past*

Old English		[{ROOT + j + d} + INFL SUFX]
Early Middle English	(i)	[{ROOT + d} + INFL SUFX] or
	(ii)	[{ROOT} + {ə d + INFL SUFX}]
Late Middle English	(i)	[{ROOT} + t] or
	(ii)	[{ROOT} + d]

Grammaticalization of 'do' from the Proto-Germanic to English went through a stage of compounding to cliticization, after which the clitic was reinterpreted as a suffix. (On these earlier stages of development from 'do', see Lahiri 2000b and references therein.) In English, this /d/ has again been reinterpreted and split up into two morphemes. The two ways of making a past tense can be traced to this split.

21.6 Implications

Under the classical view of language change, there are two possibilities: sound change and analogy. In the strictest sense, the reanalysis of /d/ from a class marker

to two inflectional suffixes is neither a sound change nor really an analogical change. If the latter, it would be a severe complication in the grammar, counter to Kiparsky's views of analogy (e.g., Kiparsky 1982a). In fact, however, the split in the dental preterite is best interpreted as grammar simplification. English, along with other Germanic languages, maintained a clear distinction between heavy and light roots that was relevant to the realization of the dental preterite. Phonological changes destroyed this clear distinction, a situation that was repaired by splitting the preterite in two. The two morphemes were chosen from existing morphophonemic variants, each being assigned to a separate level.

The analysis presented here also has consequences for dependence on paradigms for accounts of levelling, again a topic extensively addressed by Kiparsky (e.g., 1971b, 2000a). When independent phonological rules led to irregular paradigms in the Old English preterite, rather than leveling the paradigms, the original /d/ suffix in question was split into two in an attempt to maintain old quantity distinctions. It was reanalyzed into a level I /d/ (later /t/) and a level II /əd/ (later /d/). Particularly significant is that a level II suffix was able to arise from a level I suffix in this process, the opposite of the more familiar situation in which a level II suffix becomes a level I suffix over time.

This phonological analysis of Old English is considerably influenced by Paul Kiparsky's earlier work (particularly Kiparsky and O'Neill 1976). Although details differ and some controversial issues remain, the fundamental assumptions concerning Old English remain the same: the difference between the *ja*- and *i*-nouns, the relationship between GEMINATION, HIGH VOWEL DELETION, and metrical structure (''strong marking'' in Kiparsky and O'Neill 1976). Any historical phonological research, including that on Old English and especially that relating to metrical structure, owes an extraordinary debt to Kiparsky's work. This research is no exception.

Notes

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1. For reasons of space, we ignore alternations like *tell – told*. They do not contradict the central argument but need further explanation regarding the vowel alternations.

2. The underlying forms include the umlauted vowels here only for convenience.

3. Sometimes the original double consonants are still reflected in the orthography.

4. The Middle English data are put together based on the Oxford English Dictionary, Brunner (1960), Curme (1935), Moore and Marckwardt (1951), Sievers and Cook (1903), and Wright

and Wright (1908, 1928). Moore and Markwardt as well as Curme discuss in detail some of the early and late forms.

5. Moore and Marckwardt 1951, 162–163.

6. This constraint also affected other level I suffixes like /θ/: *heal – health*.

7. There were dialectal differences, but overall, before /*ld*/ the lengthening was preserved everywhere. English always had a tendency to lengthen vowels before /nC/ clusters; earlier it was more of a compensatory nature: cf. OE *fīf*, Gothic *fimf*.

8. In Northeast Midland, the third person ending was *-es*.