Harmonic evaluation of lexical items: evidence from Middle English

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OVERVIEW

I. THE PROBLEM OF LEXICAL DIFFUSION: BACKGROUND

An operational definition of lexical diffusion

(1) The implementation of change in linguistic sound systems may proceed *gradually* along different dimensions:

- phonetic ('target shift')
- phonological ('rule generalization')
- lexical ('lexical diffusion')

(See e.g. Chen, 1977: 211-213)

(2) There exist both lexically regular and lexically diffusing changes.

See Labov (1994: Part D); *pace* Cheng & Wang (1977: 86), Lass (1993: 180), Ogura (1995: 32), *et al.*

(3) Disentangling the lexical dimension:

• Let $\mathbb{C}$ be a sound change conditioned by a set $\mathcal{F}$ of phonological (and morphological) factors.
• Let *x* and *y* be any pair of distinct lexical items, such that *x* is identical to *y* with respect to each of the parameters of $\mathcal{F}$.
• Let *S* be a representative sample of discourse tokens of *x* and *y*, where external variables (age, sex, ethnicity, class, style, etc.) are controlled for.
• Then, $\mathbb{C}$ is lexically regular iff it applies with equal frequency to tokens of *x* and *y* in *S*.

In lexical diffusion, there is, in contrast, an irreducible element of lexical conditioning.

Why lexical diffusion is relevant to phonological theory

(4) *Lexical diffusion ≠ random replacement of lexical specifications*

> If we assume that lexical diffusion is nothing more than the substitution of one phoneme for another in the lexical representations of words, we have no explanation either for the direction of the change, nor for the envelope of phonological conditions that continues to control it. Kiparsky (1995: 651)

(5) The orderly progress of **ă**-Tensing in English dialects:

e.g. RP /glɑːs/, /klɑːs/, vs. /mæs/ 'quantity', /gæs/

	DIALECT	TRIGGERING CONSONANTS
less advanced	RP	nC, mC, s, θ, (f)
↓	Philadelphia	n, m, s, θ, f, (d)
more advanced	New York City	n, m, s, θ, f, d, ʃ, dʒ, b, g

(6) *Diffusion processes are not the direct result of automatic performance effects*:

e.g. the conversion of isotonic N~V pairs into diatones in English (Sherman, 1975)

Isotones	*Diatones*
concérn$_N$ ~ concérn$_V$	cónvert$_N$ ~ convért$_V$ (already diatonic in C16)
dismáy$_N$ ~ dismáy$_V$	díscount$_N$ ~ discóunt$_V$ (became diatonic during C18)
abúse$_N$ ~ abúse$_V$	áddress$_N$ ~ addréss$_V$ (diatonic only in AmE)

The direction of diffusion is *not a function of lexical frequency* either:

Despite the steady transfer of isotones to the diatonic class since C16, Sherman (1975) still lists only 220 diatones against 215 oxytonic isotones in PDE —a fifty-fifty split.

(7) Schematic characterization of lexical diffusion processes:

• In the environment [X]__[Y], the lexical specification [+F] is *dominant*, whilst the opposite specification [-F] is *recessive.*

• Diachronically, recessive specifications are replaced piecemeal by dominant specifications: i.e. lexical items are transferred one by one from the [X][-F][Y] class to the [X][+F][Y] class. (Linearity and featural binarity are an expository convenience.)

(8) Conclusion: *Lexical diffusion is controlled by the grammar; phonological theory must specify how.*

Lexical diffusion in Radical Underspecification Theory (Kiparsky, 1995)

(9) • In diffusion environments, *dominant* feature values are *underlyingly unspecified*;
recessive feature values are *underlyingly specified.*

E.g. given the diffusion schema in (7), it is claimed that

[X][+F][Y] items are represented in the lexicon as [X][0F][Y]
[X][-F][Y] items are represented in the lexicon as [X][-F][Y]

• Lexical diffusion consists of the removal of recessive specifications from the lexicon,

i.e. lexical items are transferred from the [X][-F][Y] class to the [X][0F][Y] class.

• Accordingly, lexical diffusion expands the scope of underspecification; it is a *feature minimization strategy* (see Archangeli, 1984: 50).

(10) Underspecification of dominant feature values is achieved through lexical feature-filling rules:

> [Philadelphia æ-]tensing is a feature-filling rule which assigns [+tense] to **a** in regular words in the tensing environment, and [-tense] by default elsewhere. The feature is then lexically specified only in exceptional words, such as *alas*, *wrath*.
>
> Kiparsky (p.c. to Labov, quoted in Labov, 1994: 518)

(11) • Tensing: æ → [+tense] / __ {n, m, s, θ, f, (d)} ($]_\sigma$) (refer to (5))
• Default: æ → [-tense]

Elsewhere Condition ⇨ Tensing is ordered before Default; both are structure-building only.

UR	pæs	[-tense] | əlæs	pæt
Tensing	[+tense] | pæs	blocked	n. a.
Default	blocked	blocked	[-tense] | pæt

(12) *Diffusion consists of the removal of underlying specifications blocking the application of lexical feature-filling rules.*

(13) An observation:

• It is an empirical fact that *both values of a given feature may simultaneously diffuse in the same language*: e.g. in Middle English, tense vowels were dominant in one set of environments, whilst lax vowels were dominant in the complementary set (see III).

• If so, then statement (12) is incompatible with proposals that, in Radical Underspecification Theory, “no feature is specified for both values (+ and -) underlyingly” (Durand, 1990: 158) and “all features are underlyingly privative” (Goldsmith, 1990: 245).

(14) A problem:

Kiparsky's arguments are purely *theory-internal*. In most cases, it is virtually impossible to obtain independent empirical evidence as to whether or not the required lexical feature-filling rule exists.

II. EVALUATING A DIFFERENT KIND OF CANDIDATE SET

On the nature of candidate sets

(15) The function EVAL applies to a candidate set $\{c_i, c_j, c_k, c_l...\}$ and returns a harmonic ordering $\{c_k \succ c_j \succ c_i \succ c_l...\}$, where the most harmonic candidate c_k is optimal.

Each candidate c consists of a pair of input and output representations (input$_c$, output$_c$):
- markedness constraints assess the well-formedness of output$_c$;
- faithfulness constraints assess the relationship between input$_c$ and output$_c$;
- there are no constraints assessing input$_c$ alone.

Logically, EVAL can apply to *three kinds of possible candidate sets*:

(16) *Candidate sets of the first kind*
The input representation is identical for all members of the candidate set:

(input$_i$, output$_j$)
(input$_i$, output$_k$)
(input$_i$, output$_l$)
...

Candidate sets of the first kind are involved in *ordinary input-output mapping*.

(17) *Candidate sets of the second kind*
The output representation is identical for all members of the candidate set:

(input$_x$, output$_w$)
(input$_y$, output$_w$)
(input$_z$, output$_w$)
...

Candidate sets of the second kind are involved in *Lexicon Optimization (i.e. selection of underlying forms)*; see e.g. Prince & Smolensky (1993: §9.3), Itô, Mester & Padgett (1995).

(18) *Candidate sets of the third kind*
- Both input and output representations differ across the members of the candidate set.
- Each member of the set is *grammatical*, i.e. optimal relative to all other candidates with either the same input or the same output.

(input$_a$, output$_d$)
(input$_b$, output$_e$)
(input$_c$, output$_f$)
...

(19) In lexical diffusion, dominant items differ from recessive items both at the input and the output levels; i.e. in the diffusion environment, there is asymmetry between feature values, but not neutralization.

Hypothesis: *Lexical diffusion involves harmonic evaluation of candidate sets of the third kind.*

Morphological evidence for candidate sets of the third kind

(20) Djabugay genitive allomorphy (Kager, 1995: §1; data from Patz, 1991)

	Base	*Genitive*	*Gloss*
{genitive} → /-ŋun/ / C] _]	gaɲal	gaɲalŋun, *gaɲaln	‘goanna’
{genitive} → /-n/ / V] _]	guludu	guludun, *guluduŋun	‘dove’

Partial phonological conditioning:
• Synchronically, the *existence* of two competing genitive allomorphs in Djabugay is a morphological idiosyncrasy: it is impossible to derive /-n/ from /-ŋun/ by means of productive phonological processes, or *vice versa.*
• However, the *distribution* of these two idiosyncratic allomorphs is fully predictable on phonological grounds.

(21)

[[gaɲal]{genitive}]		FAITH^{Seg}	*COMPLEX	PARSE^{Seg}	MINALL
[[gaɲal]n]	(ga)(ɲal)	*!			
	(ga)(ɲan)	*!			*
	(ga)(ɲa)(lVn)	*!			**
	(ga)(ɲal)(nV)	*!			**
	(ga)(ɲaln)		*!		*
	(ga)(ɲal)n			*!	*
[[gaɲal]ŋun] ☜	(ga)(ɲa)(lun)	*!			**
	(ga)(ɲa)(ŋun)	*!			**
	(ga)(ɲal)(ŋun) ☜				***

MINALL: Morphs are phonologically minimal.

(22)

[[guludu]{genitive}]		FAITH^{Seg}	*CMPLX	PARSE^{Seg}	MINALL
[[guludu]ŋun]	(gu)(lu)(duŋ)	**!			*
	(gu)(lu)(dun)	**!			*
	(gu)(lu)(du)(ŋun)✓				**!*
[[guludu]n] ☞	(gu)(lu)(du)(nV)	*!			**
	(gu)(lu)(du)n			*!	*
	(gu)(lu)(dun) ☞				*

(23) *Lexicon* *Morphology* *Phonological input* *Phonological output*

[[guludu]ŋun] → (gu)(lu)(du)(ŋun)

↗

[guludu] → [[guludu]{genitive}]

↘

[[guludu]n] → (gu)(lu)(dun)

[[guludu]{genitive}]		FAITH^{Seg}	*CMPLX	PARSE^{Seg}	MINALL
[[guludu]ŋun]	(gu)(lu)(du)(ŋun)				**!*
[[guludu]n] ☞	(gu)(lu)(dun) ☞				*

Psycholinguistic evidence for candidate sets of the third kind

(24) Acceptability of root-types in Modern Hebrew
(Everett & Berent, 1997, based on experimental results from Berent & Shimron, 1997)

• Relative acceptability judgements by native speakers of Modern Hebrew:

[ssm]$_{Root}$ ≺ [smm]$_{Root}$ ≺ [psm]$_{Root}$

• According to Everett & Berent (1997), these relative acceptability judgements are not a function of lexical frequency:

[ssm]-type roots are indeed exceptional (E&B report a mere four cases); but
[smm]-type roots are perfectly grammatical and exceedingly frequent.

(25) Q. If no constraint refers directly to the input representations (as per (15)), how can speakers establish harmonic orders among different roots represented in the lexicon?

A. *Competing roots form a candidate set of the third kind*: i.e. native speakers compare the constraints violations incurred in the mapping of each input representation of a root onto its optimal (grammatical) output form.

(26) *ID: Identical consonants are prohibited within the root (Everett & Berent, 1997: §3.3).
*INID: The first two consonants of the root are nonidentical (*ibidem*).

input (root)	**output** (conjugated form)	*INID	*ID
[ssm]	sisem	*	*
[sm]	simem		*
[psm]	pisem		

N.B. Everett & Berent (1997) assume that the exceptional roots surfacing with identical initial consonants are marked as triliteral in the lexicon, whilst ordinary roots surfacing with identical final consonants are underlyingly biliteral and undergo consonant copy.

Candidate sets of the third kind in lexical diffusion

(27) • Assume that CON includes the following two constraints regulating the distribution of the feature [F]:

*[X][+F]: [+F] may not occur in the environment [X]__.
*[-F][Y]: [-F] may not occur in the environment __[Y].

• Assume, moreover, that language *L* is observed to be affected by a process of lexical diffusion conforming to the following pattern (repeated from (7)):

in the environment [X]__[Y], the specification [+F] is *dominant*;
in the environment [X]__[Y], the specification [-F] is *recessive.*

(28) Q. Why is the contrast between [X][+F][Y] and [X][-F][Y] not neutralized in *L*?
A. Because FAITH[F] dominates both *[X][+F] and *[-F][Y].

[X][+F][Y]	FAITH[F]	*[X][+F]	*[-F][Y]
[X][-F][Y]	*!		*
[X][+F][Y] ☞		*	

[X][-F][Y]	FAITH[F]	*[X][+F]	*[-F][Y]
[X][+F][Y]	*!	*	
[X][-F][Y] ☞			*

(29) Q. Why is the specification [X][+F][Y] dominant, whereas [X][-F][Y] is recessive?
A. Because, given the ranking *[-F][Y] » *[X][+F], the structure [X][+F][Y] is more harmonic than the structure [X][-F][Y].

input	**output**	FAITH[F]	*[-F][Y]	*[X][+F]
[X][-F][Y]	[X][-F][Y]		*!	
[X][+F][Y] ☞	[X][+F][Y] ☞			*

But it should be possible to obtain independent evidence as to whether or not the required ranking *[-F][Y] » *[X][+F] really obtains in *L*!

(30) Conclusion: The hypothesis that lexical diffusion is driven by the constraint hierarchy (with EVAL applying to candidate sets of the third kind) is *empirically falsifiable.*

III. THE MIDDLE ENGLISH EVIDENCE

Irregular vowel length changes in Middle English

(Full word-lists and philological discussion in Bermúdez-Otero, in preparation)

(31) *Lengthening in monosyllabic stems closed by a single consonant*
(See also Ritt, 1997)

Lengthened		**Unlengthened**	
OE	PDE	OE	PDE
blǣ̆d	*blade*	*blǣ̆c*	*black*
cŏl	*coal*	*gŏd*	*god*
crăn	*crane*	*glǣ̆d*	*glad*
geŏc	*yoke*	*hlŏt*	*lot*
hwǣ̆l	*whale*	*swăn*	*swan*

(32) *Shortening in stressed open syllables in disyllabic stems*

Shortened		**Unshortened**	
OE	PDE	OE	PDE
cīecen	*chicken*	*bēacen*	*beacon*
hǣring	*herring*	*hālig*	*holy*
sārig	*sorry*	*hǣðen*	*heathen*
sǣlig	*silly*	*tācn*	*token*
wǣpen	*weapon*	*þūsend*	*thousand*

The handbooks' tale

(33) *Middle English Open Syllable Lengthening* (MEOSL)
Non-high vowels lengthen in stressed open syllables (Luick, 1964: §§391-5)

MEOSL		**'exceptions'**	
OE	PDE	OE	PDE
hrǣ̆fn	*raven*	*bŏdig*	*body*
mĕte	*meat*	*hămor*	*hammer*
năma	*name*	*hĕofon*	*heaven*
nŏsu	*nose*	*gănot*	*gannet*
tălu	*tale*	*sĕofon*	*seven*

(34) The irregular lengthening of monosyllabic -VC stems (see (31)) is imputed to levelling from disyllabic inflected forms subject to MEOSL (see Luick, 1964: §392.1):

	sg		**pl**	
OE	*hwæ̆l*		*hwălas*	
			↓	MEOSL
ME	*whāl*	←	*whāles*	
		levelling		

(35) *Trisyllabic Shortening* (TSS)
Long vowels shorten in stressed antepenultimate syllables)

OE	PDE
ǣrende	*errand*
ǣmette	*emmet*
hāligdæg	*holiday*
Mīcheles mæsse	*Michaelmas*
sūðerne	*southern*

(36) The irregular shortening of stressed unchecked vowels in disyllabic stems (see (32)) is imputed to levelling from trisyllabic inflected forms subject to TSS (see Luick, 1964: §387):

	sg		**pl**	
OE	*hǣring*		*hǣringas*	
			↓	TSS
ME	*hĕring*	←	*hĕringes*	
		levelling		

(37) The so-called ‘exceptions’ to MEOSL (see (33)) are also imputed to levelling from trisyllabic inflected forms subject to TSS (see Luick, 1964: §392.2):

	sg		**pl**	
OE	*hĕofon*		*hĕofonas*	
			↓	TSS
ME	*hĕven*	←	*hĕvenes*	
		levelling		

Why the analogical explanation doesn't work (Bermúdez-Otero, forthcoming)

(38) There is *no reliable evidence for TSS*:

(i) There are practically no instances of TSS in uninflected forms in the Germanic vocabulary; list (35) includes nearly all the alleged examples.

(ii) Luick (1964: §353 Anm. 4) assumes that TSS is coeval with Closed Syllable Shortening (CSS; see (43) below); but, by the late C12, CSS was fully morphologized and failed to create any stem-allomorphy within nominal paradigms:

e.g. *Orrmulum* (c. 1180)

sg	**pl**	OE	gloss
<dækenn>	<dæcness>; *<deccness>	*dēacon*	‘deacon’
<tákenn>	<tacness>; *<taccness>	*tācn*	‘token’

In spelling, double consonants indicate that the preceding vowel is short.
Metrical scansion confirms that the syncopated plural forms are bisyllabic.

(iii) Chomsky & Halle's (1968) classic examples of TSS in the Romance vocabulary (*sanity*, *vanity*...) were never subject to historical sound change, but were directly borrowed from OF with a short vowel, sometimes centuries before their alleged base (Marchand, 1960; Minkova & Stockwell, 1996)

e.g. *procession* 1150 ~ *proceed* 1350
sanity 1432 ~ *sane* 1694

(39) • So-called MEOSL was really a *compensatory lengthening* process triggered by the loss of stem-final schwa (Minkova, 1982; Hayes, 1989):

eME /namə/ > lME /naːm/ ‘name’
eME /metə/ > lME /mɛːt/ ‘meat’

• Variable lengthening was possible in unapocopated disyllabic stems if, and only if, the post-tonic rhyme contained a deletable schwa in free variation with a nuclear sonorant:

ME /ravən/~/ravn̩/ > PDE *raven*

but

ME /bodi/ > PDE *body*

(40) Incidence of lengthening among unapocopated disyllabic stems in Minkova's corpus according to the presence of a nuclear sonorant C in free variation with [ə] in the post-tonic rhyme:

df = 1
$\chi^2 = 12.646$
$p < .0005$

		Lengthening			
		YES		NO	
		observed	expected	observed	expected
Sonorant C in unstressed σ	YES	34	25	122	131
	NO	1	10	64	55

(41) *Conclusion*:

a) In ME, long vowels were dominant, and short vowels recessive, in monosyllabic stems closed by a single consonant.

b) In ME, short vowels were dominant, and long vowels recessive, in polysyllabic stems lacking a post-tonic deletable schwa.

(42) *Loans from OF*:

-VC oxytones

OF	PDE
bas	*base*
bec	*beak*
fol	*fool*
pris	*price*
desfait	*defeat*
devot	*devout*

(Pro-)paroxytones without [ə]~∅

OE	PDE
jolif	*jolly*
palais	*pallace*
treliz	*trellis*
qualité	*quality*
vanité	*vanity*

Long vowel dominance in monosyllables closed by a single C

(43) *Closed Syllable Shortening* (CSS)

***μμμ* » IDENT$^{\mu\mu}$**

where **μμμ*: Syllables are maximally bimoric.
IDENT$^{\mu\mu}$: All bimoric input segments have a bimoric output correspondent.

(a) OE	PDE	(b) OE	PDE
fȳlþ	*filth*	*cēpte*	*kept*
hǣlþ	*health*	*fīftig*	*fifty*
fȳst	*fist*	*fēdde*	*fed*

(44) However, -VVC monosyllables escape CSS because the final consonant in extrasyllabic:

WEAKC » PARSE^{Seg}

where WEAKC: A consonant at the right edge of the prosodic word is dominated by the fewest possible prosodic nodes (Spaelti, 1994).

PARSE^{Seg}: Segments are syllabified.

e.g. OE /stɑːn/ > ME /stɔːn/ > PDE /stəʊn/

/stɔːn/	*µµµ	WEAKC	IDENT^{µµ}	PARSE^{Seg}
$(\text{stɔːn})_\sigma$	*!	*!		
$(\text{ston})_\sigma$		*!	*	
$(\text{stɔː})_\sigma$n ☞				*

(45) WEAKC also participates in Compensatory Lengthening: the loss of stem-final schwa leaves a floating mora, which is forced by WEAKC to dock onto the stressed vowel:

e.g. eME /namə/ > lME /naːm/ 'name' (see (39)).

/na$_µ$mə$_µ$/	*ə	WEAKC	PARSE^{Seg}
(na$_µ$)(mə$_µ$)	*!		
(na$_µ$m$_µ$)		*!	
(na$_{µµ}$)m ☞			*

(46) Nevertheless, vowel length contrasts are *not neutralized* in the environment $[C_0\_\_C^1]_{Word}$ owing to the dominance of faithfulness constraints:

DEP^µ » WEAKC

where DEP^µ: All morae present in the output have an input correspondent

e.g. OE /lok/ > ME /lok/ > PDE /lɒk/ .

/lok/	FTBIN	DEP^µ	WEAKC	PARSE^{Seg}
$(\text{lo})_\sigma$k	*!			*
$(\text{lɔː})_\sigma$k		*!		*
$(\text{lok})_\sigma$ ☞			*	

(47) Let us evaluate -VVC and -VC monosyllables together as a *candidate set of the third kind* (see (29) above).

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input	**output**	DEP$^{\mu}$	WEAKC	PARSE^{Seg}
CVC	$(CVC)_{\sigma}$		*!	
CVVC ☞	$(CVV)_{\sigma}C$ ☞			*

It turns out that the ranking DEP$^{\mu}$ » WEAKC » PARSE^{Seg}, which was established on completely independent grounds, correctly predicts the dominance of -VVC monosyllables and the recessiveness of -VC monosyllables (see (41a)).

Short vowel dominance in polysyllabic stems

(48) *OE High Vowel Deletion* (HVD)
High vowels are deleted in unstressed word-final syllables when preceded by a heavy stressed syllable or a light stressed syllable plus another syllable (Campbell, 1959: §345-6)

e.g. neuter *a*-stems		**nom sg**	**nom pl**	**gen pl**	
		fæ̆t	*fătu*	*făta*	'vat'
		scĭp	*scĭpu*	*scĭpa*	'ship'
	but				
		bān	*bān*	*bāna*	'bone'
		word	*word*	*worda*	'word'
	and				
		wĕrod	*wĕrod*	*wĕroda*	'troop'

(For some recalcitrant problems, see Hogg, 1997)

(49) I assume that HVD targets unparsed syllables (see Kager, 1997):

MAX$^{[-high]}$ » PARSE^{s} » MAX$^{[+high]}$

where MAX$^{[-high]}$: All nonhigh vowels present in the input have an output correspondent
PARSE$^{\sigma}$: Syllables are footed
MAX$^{[+high]}$: All high vowels present in the input have an output correspondent

/fæt-u/	PARSE$^{\sigma}$	MAX$^{[+high]}$
$(fæt)_{Ft}$		*!
$(fɑ.tu)_{Ft}$ ☞		

(50) In the case of /bɑːn-u/ → [bɑːn], the high vowel must be deleted because OE does not tolerate unbalanced trochees: *$(bɑː.nu)_{Ft}$. Note that the foot cannot be rescued by shortening the stressed vowel.

RHHRM, IDENT$^{\mu\mu}$ » PARSE^{s}

where RHHRM: *(σ̄σ̆) Prince & Smolensky (1993: 59)

/bɑːn-u/	RHHRM	IDENT$^{\mu\mu}$	PARSE$^{\sigma}$	MAX$^{[+high]}$
(bɑː.nu)$_{Ft}$	*!			
(bɑ.nu)$_{Ft}$		*!		
(bɑː)$_{Ft}$nu			*!	
(bɑː)$_{Ft}$n ☞				*

cf.

/bɑːn-ɑ/	RHHRM	IDENT$^{\mu\mu}$	MAX$^{[-high]}$	PARSE$^{\sigma}$
(bɑː.nɑ)$_{Ft}$	*!			
(bɑ.nɑ)$_{Ft}$		*!		
(bɑː)$_{Ft}$n			*!	
(bɑː)$_{Ft}$nɑ ☞				*

(51) Let us evaluate σ̄σ and σ̆σ stems together as a candidate set of the third kind under the ranking RHHRM, IDENT$^{\mu\mu}$ » PARSE$^{\sigma}$:

input	**output**	RHHRM	IDENT$^{\mu\mu}$	PARSE$^{\sigma}$
σ̄σ	(σ̄)$_{Ft}$σ			*!
σ̆σ ☞	(σ̆σ)$_{Ft}$ ☞			

It turns out that this ranking, independently motivated by the facts of HVD, correctly predicts the dominance of short stressed vowels in polysyllabic stems (see (41b)).

Historical persistence? Lexical diffusion in the Belfast vernacular

(52) Tensing of ME **ĕ** in Belfast (Milroy, 1976, 1980; Milroy & Milroy, 1978, 1985)

• In the Belfast vernacular, the conservative realization of ME **ĕ** as short low [æ̈] is giving way through lexical diffusion to a long mid realization [ɛˑə] originating in Ulster Scots (Milroy & Milroy, 1985:354).

• Crucially, [æ̈] *is favoured in polysyllabic stems* (and in monosyllables closed by voiceless stops), whilst [ɛˑə] *is favoured in monosyllabic stems* (except if closed by a voiceless stop)

e.g.

[ɛ·ə]	[æ̈]	
Ed	*Eddy*	
fell	*fellow*	
ten	*tenor*	
wed	*wedding*	
mess	*message*	(Milroy, 1980: 361)

(53) The Belfast tensing pattern is thus very similar to that of the ME irregular vowel length changes: in both cases, long vowels are dominant in monosyllabic stems and recessive in polysyllabic stems.

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