Senior Common Room Lunch Talk
University College

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A brief history of English stress

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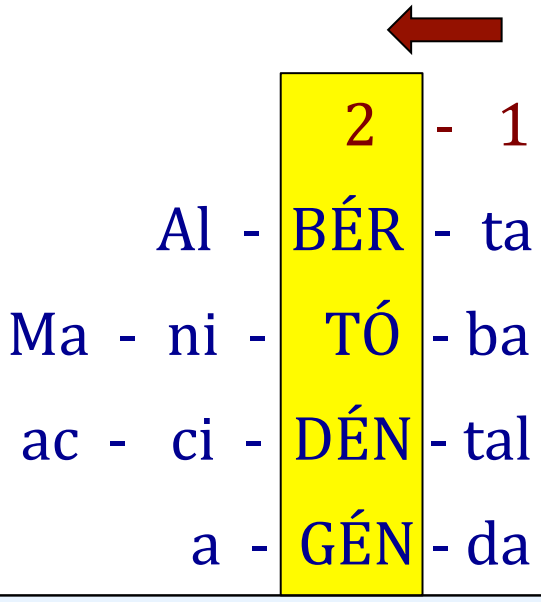
A brief history of English stress

The Present Day English stress system

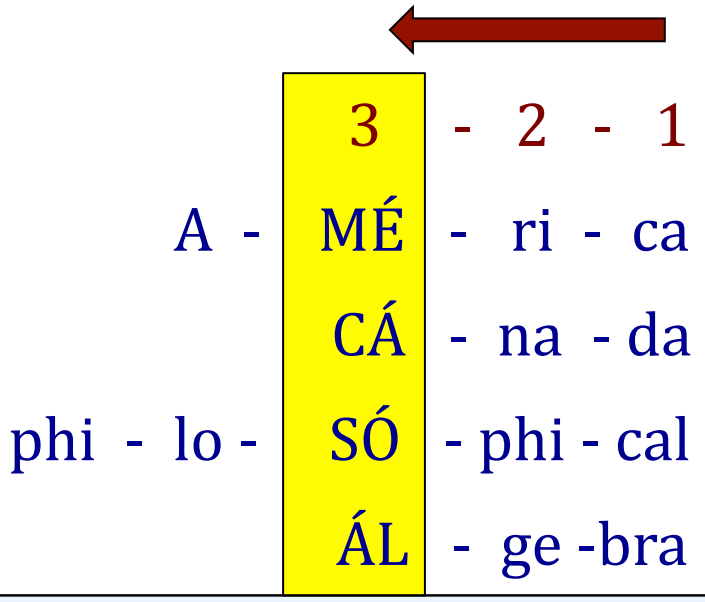
Stress in Present Day English is oriented to the end of the word:

Starting at the end of a word, one counts back and puts the stress either on the second-to-last or third-to-last syllable.

Second-to-last (Penult)



Third-to-last (Antepenult)

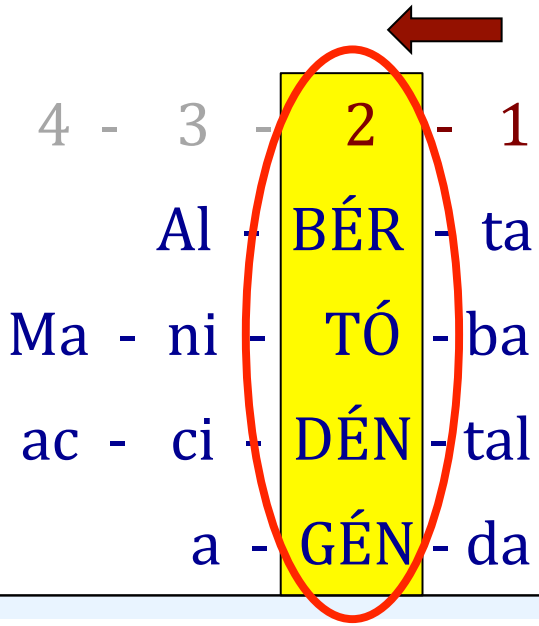


The Present Day English stress system

The difference in the two columns has to do with the nature of the penultimate syllable:

When the penult is heavy, that is, closed by a consonant or has a long vowel (like in *Ma-ni-tóo-ba*), it is stressed.

Second-to-last (Penult)



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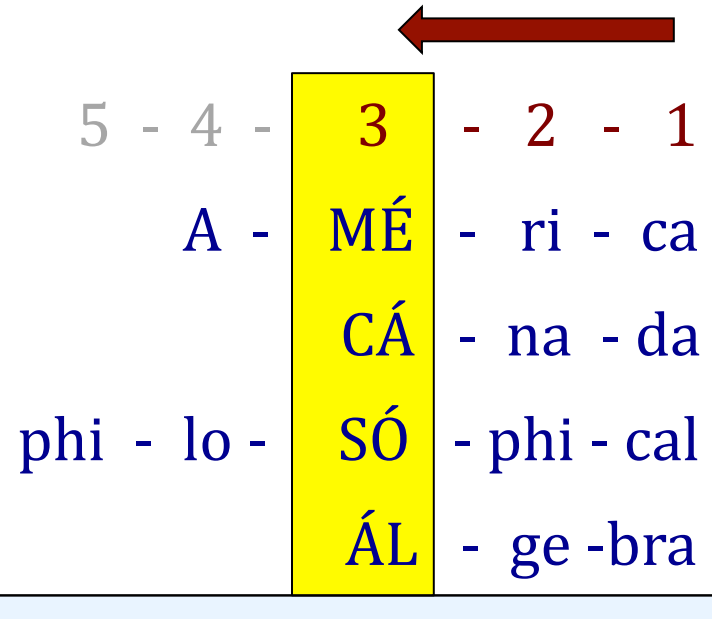
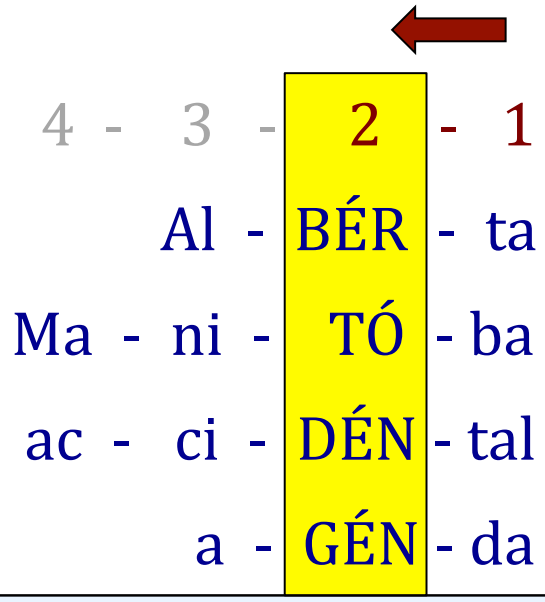


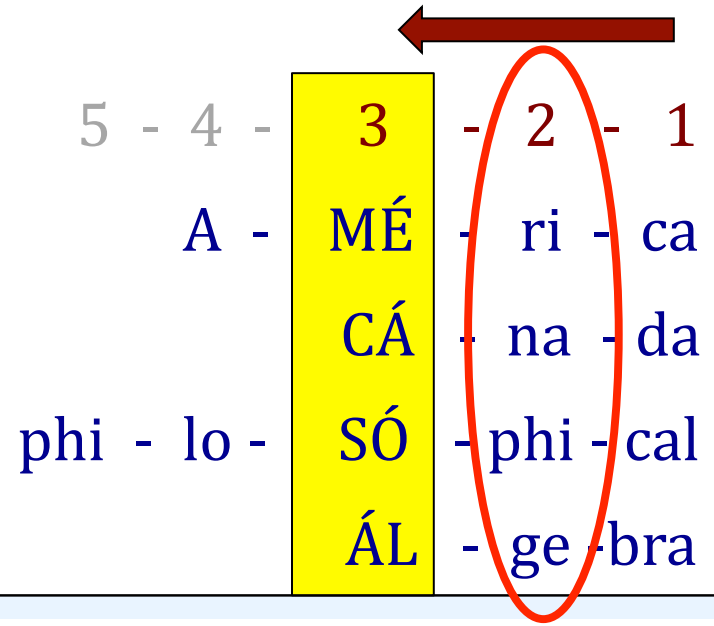
The Present Day English stress system

If the penult is light, that is, ends in a short vowel, then stress goes on the antepenult.

Second-to-last (Penult)



Third-to-last (Antepenult)



The Present Day English stress system

This system resembles that of Classical Latin: the important thing to know is that stress is computed from the RIGHT word-edge.

Second-to-last (Penult)

4	3	2	1
	Al	BÉR	ta
Ma	ni	TÓ	ba
ac	ci	DÉN	tal
	a	GÉN	da

Third-to-last (Antepenult)

5	4	3	2	1
	A	MÉ	ri	ca
		CÁ	na	da
phi	lo	SÓ	phi	cal
		ÁL	ge	bra

A thousand years ago (in 1018)…

A thousand years ago, English did not have this stress pattern.

Second-to-last (Penult)

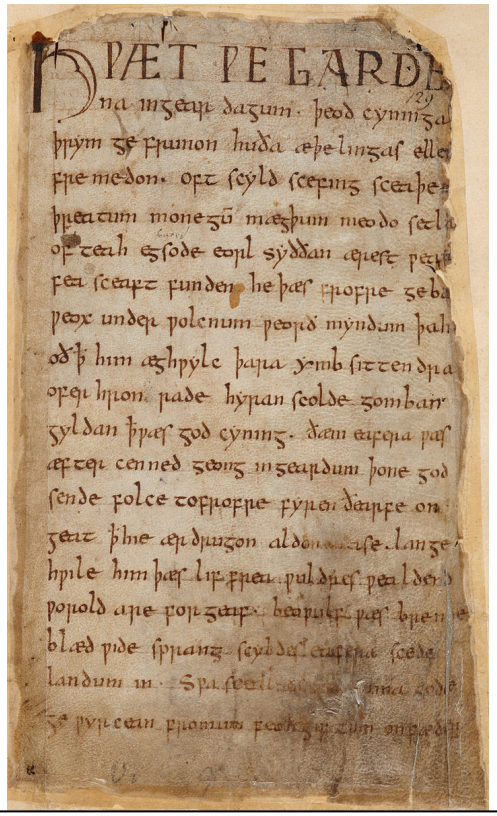
Third-to-last (Antepenult)

The Old English stress system

Old English (c. 450–1100) inherited from its Germanic ancestor a completely different stress system.

Sutton Hoo helmet (c. 625)

Beowulf manuscript (c. 1000)



The Old English stress system

In Old English, stress was computed from the LEFT edge of a word: the first syllable received main stress.

Some prefixes did not receive a stress, particularly in verbs. In such cases, stress was on the second syllable (still from the LEFT).

Stress the first syllable

1		
CÝ	- nin - ga	‘of the kings’
Æ	- þe - lìn - gas	‘nobles’
ÁN	- ġìn	‘beginning’
WÍ	- þer - sà - ca	‘adversary’

Unstressed prefix

1 -	2		
ġe -	ÉN	-de-bỳr-dan	‘to arrange’
ġe -	BÉD		‘prayer’
an -	ĠÍN	-nan	‘to begin’
wiþ-	SÁ	-can	‘to refuse’

The Old English stress system

Notice the pattern whereby a noun has initial stress (on the prefix) and its related verb has an unstressed prefix.

This pattern will continue into later English, as in *récord* (noun) ~ *recórd* (verb) and *pérmit* (noun) ~ *permít* (verb)

Stress the first syllable			Unstressed prefix			
1			1 -	2		
BĪ	- gèn - ġa	‘inhabitant’	be -	GǍN		‘to occupy’
ÆF	- þàn - ca	‘offence’	of -	ÞÝN	- ċan	‘displease’
ÁN	- ġìn	‘beginning’	an -	ĠÍN	-nan	‘to begin’
WÍ	- þer - sà - ca	‘adversary’	wiþ-	SÁ	-can	‘to refuse’

Why did the English stress system change?

But what caused the English stress system to change so drastically from the LEFT side of the word to the RIGHT?

Did a new group of people invade Anglo-Saxon England and bring with them their native Latinate prosody?

Actually, this did happen!

Part of the Bayeux Tapestry: William of Normandy sails to England

The Norman conquest

In 1066, England was conquered by the Normans ('Norsemen'), a Germanic group who had moved from Scandinavia to Northern France and who spoke dialects of Old French.

Anglo-Norman French thus became the language of the English court and upper classes for over 300 years, until 1399.

Part of the Bayeux Tapestry: William of Normandy sails to England

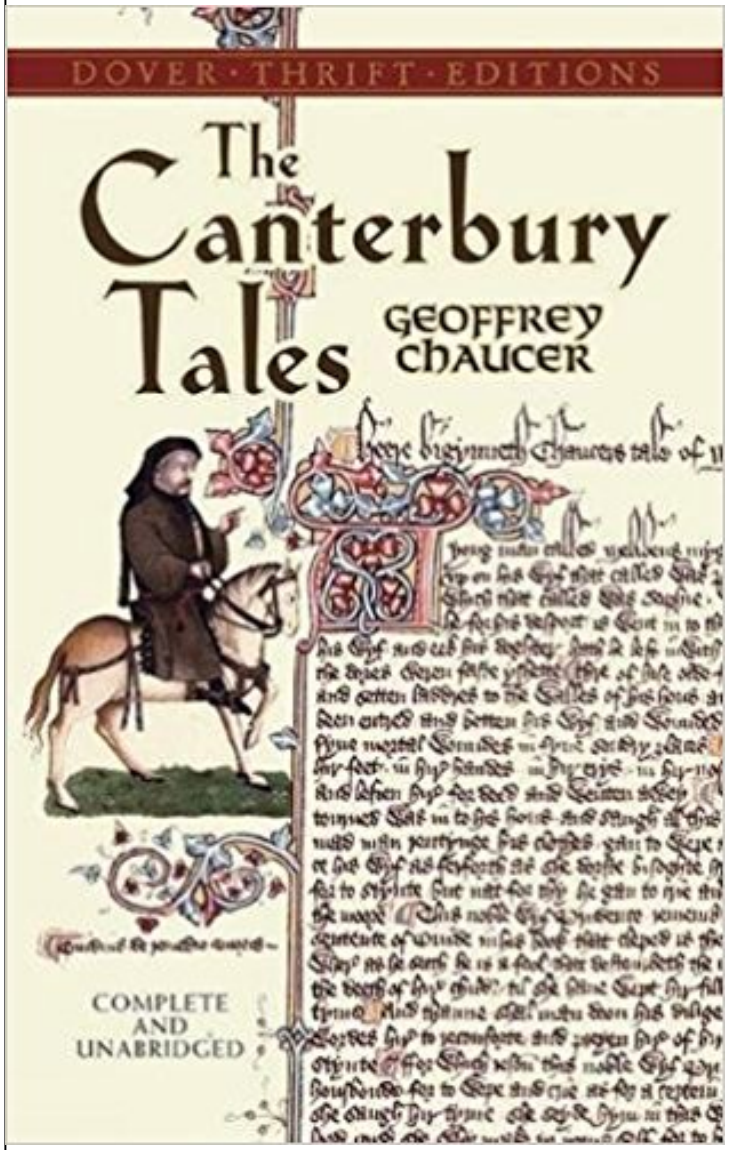
Influence of Anglo-Norman French

In this period, Old English became Middle English, and many Romance words were imported into English from Norman French, Old French, and Latin (Romance = derived from Latin).

Though the stress system of French differed from Classical Latin, all the Romance languages inherited from Latin a stress system oriented to the RIGHT edge of the word.

Therefore, it is plausible to suppose that rightward oriented stress gained a foothold in English in this period, as has been proposed by Halle & Keyser (1971) and Lass (1992).

Influence of Anglo-Norman French



They point to evidence from the verse of Geoffrey Chaucer (c. 1343–1400).

Depending on the requirements of the meter, Chaucer could stress Romance words in two ways:

Stress doublets in Chaucer

Stress could go on the LEFT (initial syllable), in keeping with the native Germanic system;

or on the RIGHT (final or penult), in the Old French way.

LEFT	RIGHT	LEFT	RIGHT
cítee	citée	géant	geáunt
cómfort	comfórt	lícour	licóur
dívers	divérse	présent	presént
fórtune	fortúne	sérvant	serváunt

Stress doublets in Chaucer

An example of this variation in a single line is:

|w s|w s| w s | w s | w s|w (*iambic pentameter:* |w s| x 5)

'In dívers art and in divérse figúres' (Friar's Tale III 1486)

LEFT	RIGHT	LEFT	RIGHT
cítee	citée	géant	geáunt
cómfort	comfórt	lícour	licóur
dívers	divérse	présent	presént
fórtune	fortúne	sérvant	serváunt

Descendants of the stress doublets in Chaucer

Consider, however, the Present Day English descendants of these words: the vast majority have stress on the LEFT.

The exceptions fit the Old English pattern of unstressed prefixes; note particularly the noun ~ verb stress alternation.

LEFT	RIGHT	LEFT	RIGHT
cíty		gíant	
cómfort		líquor	
	divérse	présent (*noun*)	presént (*verb*)
fórtune		sérvant	

Descendants of Romance words in Chaucer

More generally, the PDE reflexes of almost ALL the Romance words with French RIGHT-edge stress in Chaucer have initial stress consistent with Germanic stressing on the LEFT:

vírtue	fórtune	bárren
Égypt	cómfort	góvern
sólemn	hónour	mércy
Jésus	ábbot	Júdith
témpest	gíant	présent
Pláto	cíty	díscord
sérvant	tórment (*noun*)	týrant

Influence of Anglo-Norman French?

That is, these Romance words have all assimilated to the native English pattern of stress on the LEFT; their optional stress on the RIGHT in Chaucer has not survived.

This result is consistent with a wider generalization: Romance words that entered English in the Middle English period did not leave any lasting effects on English prosody.

Thus, disyllabic words borrowed from Romance before the 15th century almost all have stress on the LEFT in PDE:

Romance words borrowed before the 15th c.

Initial stress (stem vowel is short in Present Day English)

English	*Date*	*English*	*Date*
talent	893	coral	1305
baron	1200	profit	1325
senate	1205	metal	1340
jealous	1250	satin	1366
palace	1290	moral	1380
channel	1300	volume	1380
gallon	1300	second	1391
panel	1300	Latin	1391

Romance words borrowed before the 15th c.

Initial stress (stem vowel is long in Present Day English)

English	*Date*	*English*	*Date*
basin	1220	paper	1374
moment	1240	raisin	1382
vacant	1290	patent	1387
odour	1300	famous	1400
process	1330		

No effect of Romance on Middle English stress

Final stress

English	*Date*	*English*	*Date*
diverse	1297	divine	1374
reward	1340	degree	1380

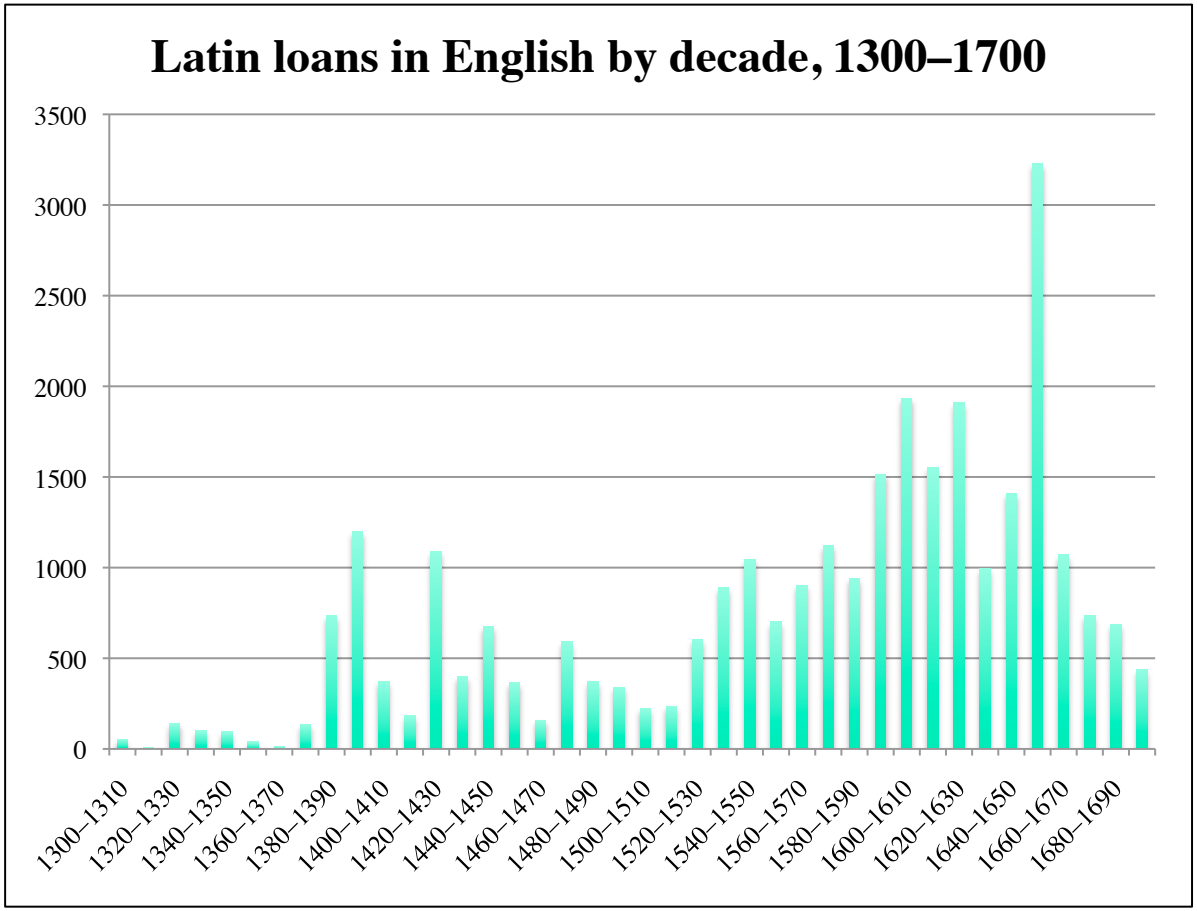
The small group of words that survive with final stress are consistent with the Old English pattern of unstressed prefixes.

We conclude, then, contrary to what has sometimes been claimed, that the Norman conquest and the influx of many Romance words did not have a lasting impact on Middle English prosody.

That is, there is no evidence of the change from LEFT to RIGHT in English stress before 1400. So when did it occur?

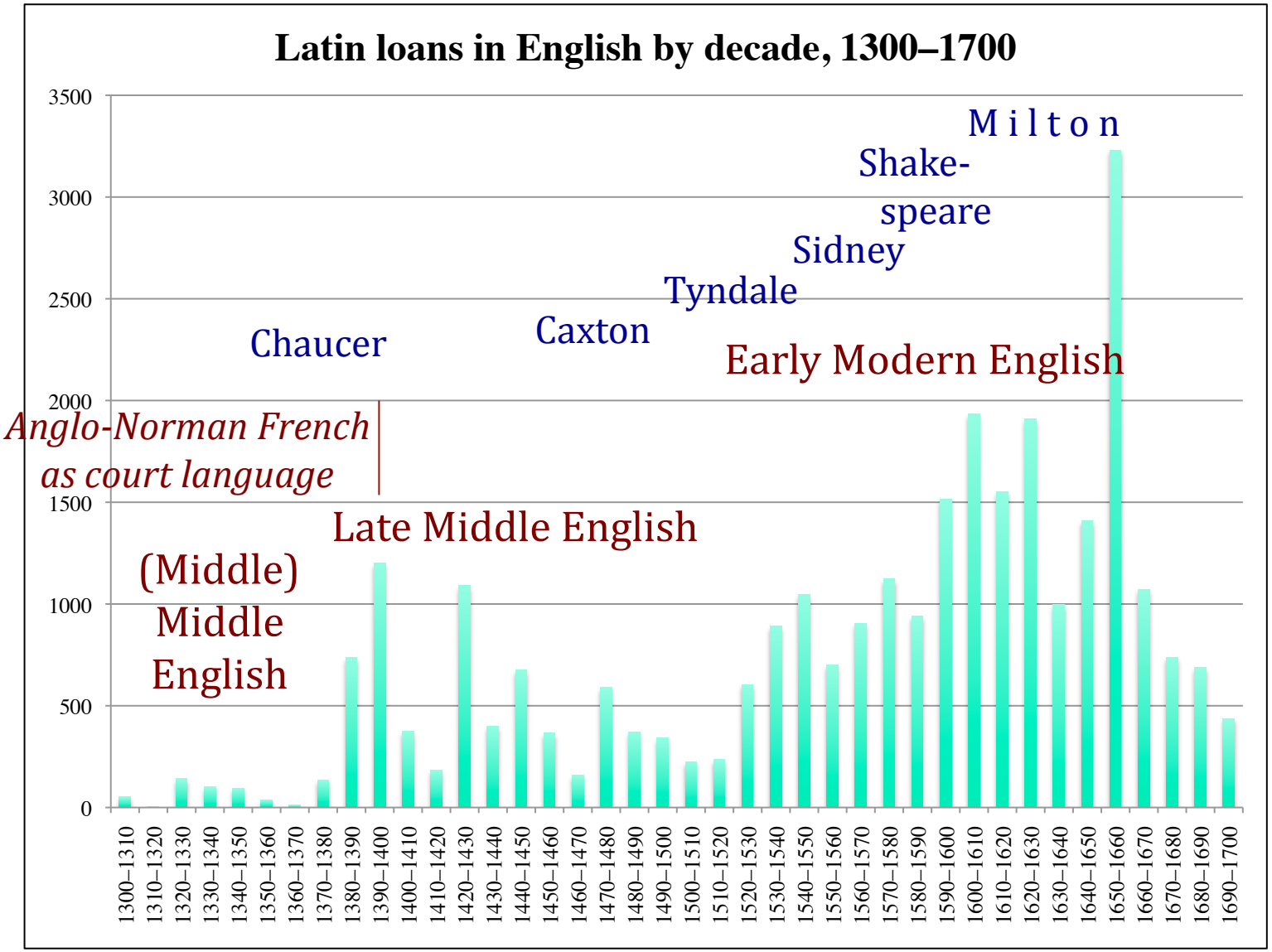
Latin borrowings in Early Modern English

Borrowing from Latin began on a large scale in Late Middle English (c1400) and increased in Early Modern English (early 1500s).



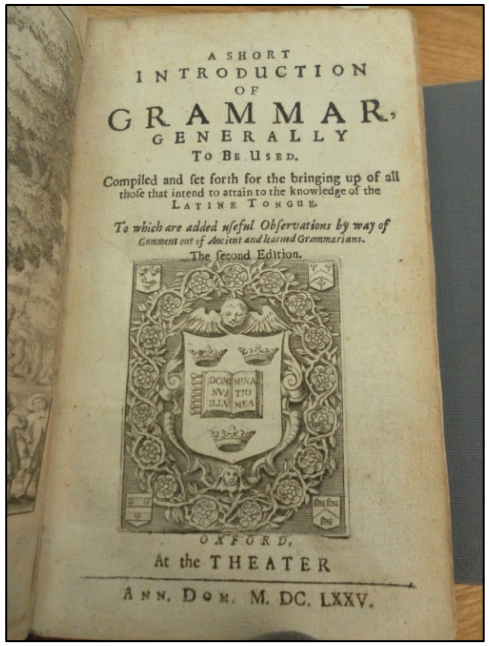
This is a chart of the number of Latin words that first appeared in each decade between 1300 and 1700, according to the *Oxford English Dictionary* (*OED*).

Latin borrowings in Early Modern English



Latin borrowings

The view of many scholars, which we adopt, is that English stress changed due to the influence of the many Latin words borrowed into English in the 16th and 17th centuries.


A SHORT
INTRODUCTION
OF
GRAMMAR,
GENERALLY
TO BE USED.
Compiled and set forth for the bringing up of all those that intend to attain to the knowledge of the LATINE TONGUE.
To which are added useful Observations by way of Comment out of Ancient and learned Grammarians.
The second Edition.
OXFORD,
At the THEATER
ANN. DOM. M. DC. LXXV.

Latin grammar by William Lily (c.1468–1522), widely used in Elizabethan England and the following centuries.

Latin borrowings

But why did this wave of borrowed words succeed in changing the English stress system, whereas the earlier wave of Romance words in the Middle English period did not?

Our view is that it is not just the quantity of borrowed words, but their nature, that is crucial.

Latin words with suffixes

Following commentators such as Danielsson (1948) and Poldauf (1981), we think that the accumulation of words with Latin suffixes was particularly important.

Examples of these suffixes are given below:

Example	*Suffix*	*Example*	*Suffix*
accidéntal	-al *(adj)*	histórify	-ify
Sicílian	-an *(adj)*	prohibítion	-ion
animátion	-ation	infínitude	-itude
harmónic	-ic	arídity	-ity

Latin words with suffixes

Words with these suffixes are important because when we compare them to related unsuffixed words, we can see that stress is being influenced from the RIGHT:

Related	*Example*	*Suffix*	*Related*	*Example*	*Suffix*
áccident	accidéntal	-al *(adj)*	hístory	histórify	-ify
Sícily	Sicílian	-an *(adj)*	prohíbit	prohibítion	-ion
ánimate	animátion	-ation	ínfinite	infínitude	-itude
hármony	harmónic	-ic	árid	arídity	-ity

Alternations with suffix *-al*

Alternatively, comparing words with the same suffix would show the same thing:

Words with stress on a penultimate syllable contrast with words that have stress on the antepenultimate syllable.

Second-to-last (Penult)

	2	- 1
ac - ci -	DÉN	- tal
in - stru -	MÉN	- tal
sa - cra -	MÉN	- tal
u - ni -	VÉR	- sal

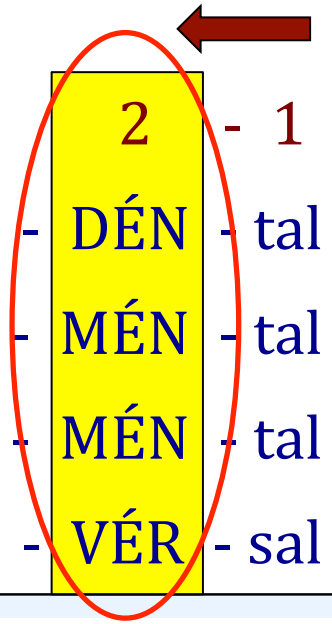
Third-to-last (Antepenult)

	3	- 2 - 1
me -	DÍ	- ci - nal
o -	RÍ	- gi - nal
phi - lo -	SÓ	- phi - cal
sa -	TÍ	- ri - cal

Alternations with suffix *-al*

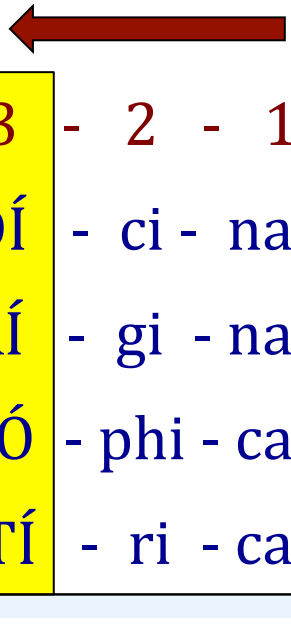
Recall that the difference has to do with the form of the penult: it receives stress when it is heavy (closed by a consonant, in the words below).

Second-to-last (Penult)



2	1
ac - ci - DÉN	- tal
in - stru - MÉN	- tal
sa - cra - MÉN	- tal
u - ni - VÉR	- sal

Third-to-last (Antepenult)



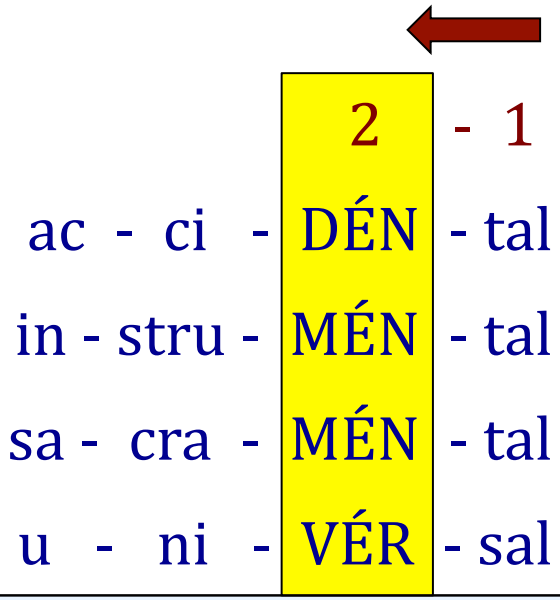
3	2	1
me - DÍ	- ci -	nal
o - RÍ	- gi -	nal
phi - lo - SÓ	- phi -	cal
sa - TÍ	- ri -	cal

Alternations with suffix *-al*

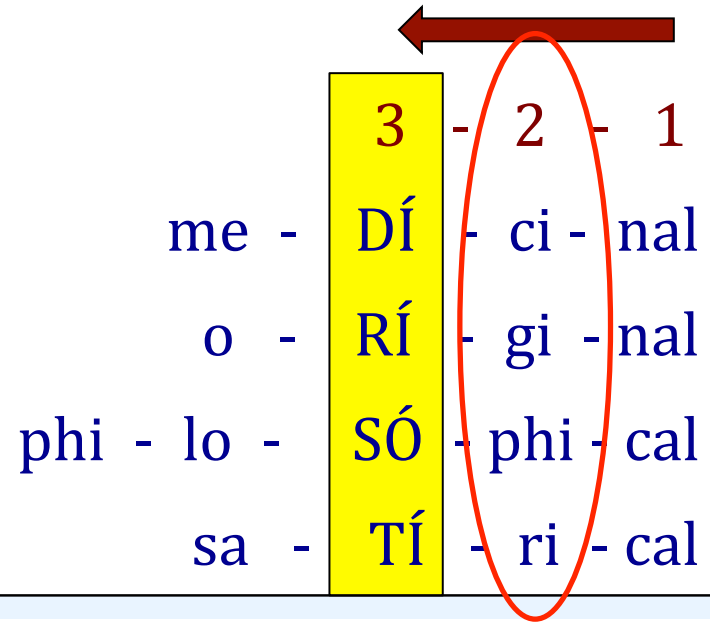
Recall that the difference has to do with the form of the penult: it receives stress when it is heavy (closed by a consonant, in the words below).

Words with stress on the antepenult have a light penult (ending in a short vowel).

Second-to-last (Penult)



Third-to-last (Antepenult)



Alternations with suffix *-al*

The important thing is that when speakers are able to recognize that all these words contain the same suffix, they can see that stress is being computed from the RIGHT.

Second-to-last (Penult)

	2	- 1
ac - ci -	DÉN	- tal
in - stru -	MÉN	- tal
sa - cra -	MÉN	- tal
u - ni -	VÉR	- sal

Third-to-last (Antepenult)

	3	- 2 - 1
me -	DÍ	- ci - nal
o -	RÍ	- gi - nal
phi - lo -	SÓ	- phi - cal
sa -	TÍ	- ri - cal

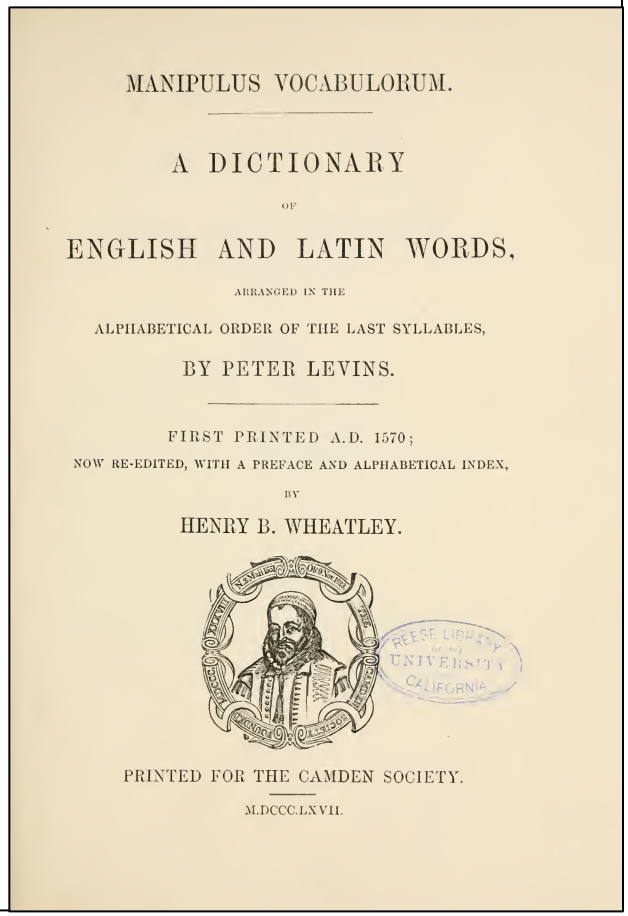
Quantitative considerations

To put the influence of Romance loanwords on a quantitative basis, we will compare the situation in 1400 (Middle English), the year of Chaucer's death, and 1570 (Early Modern English).

1570 is the year of the publication of Peter Levins' *Manipulus Vocabulorum*, a rhyming dictionary that indicates the location of stress in many words.

We believe that this Levins' data shows that the direction of stress is in transition, with some words having stress computed from the LEFT (the old way), and others from the RIGHT (the new way).

I can't go into that evidence here, however.



MANIPULUS VOCABULORUM.

A DICTIONARY

OF

ENGLISH AND LATIN WORDS,

ARRANGED IN THE

ALPHABETICAL ORDER OF THE LAST SYLLABLES,

BY PETER LEVINS.

FIRST PRINTED A.D. 1570;

NOW RE-EDITED, WITH A PREFACE AND ALPHABETICAL INDEX,

BY

HENRY B. WHEATLEY.

PRINTED FOR THE CAMDEN SOCIETY.

M.DCCC.LXVII.

Quantitative considerations

According to the *OED*, by 1400 English had borrowed around 6,580 words of Romance (mostly French and Latin) origin, which comprised about 21.5% of the 30,568 total number of words in English to that time.

By 1570, the Romance words increased by 93%. However, the total words in 1570 increased by 127%.

	1400	1570	% δ (change)
a. All words	30,568	69,364	127%
b. All Romance words	6,580	12,727	93%
c. % Romance/All words	21.5%	18.3%	–3.2%

Quantitative considerations

These numbers suggest that the overall percentage of Romance words in the language is not a decisive factor in triggering a change in the stress system, because there was no increase in the overall proportion of Romance words in the period of interest.

If our hypothesis is correct, we should however see a significant increase in the number of words with stress-affecting Latinate suffixes.

	1400	1570	% δ (change)
a. All words	30,568	69,364	127%
b. All Romance words	6,580	12,727	93%
c. % Romance/All words	21.5%	18.3%	–3.2%

Quantitative considerations

As displayed below, the changes in this part of the loanword vocabulary are quite dramatic.

The question arises, though: how many words are needed to cause a change in the grammar?

Why are 163 words with suffix *-al* not enough to have an effect, but 745 are?

Suffix	1400	1570	% δ	Suffix	1400	1570	% δ
-al *(adj)*	163	745	357%	-ic	87	279	221%
-an *(adj)*	64	313	389%	-ion	507	1,717	239%
-ation	242	957	295%	-ity	144	563	291%

The Tolerance Principle (Yang)

This question is similar to asking: If we have a rule and some number of exceptions, how many exceptional forms can be tolerated before learners give up on the rule?

Charles Yang (2005; 2016) has proposed an answer to this question, in the form of a theorem he calls the Tolerance Principle:

The Tolerance Principle

Let R be a rule that is applicable to N items, of which e are exceptions. R is productive if and only iff

$$e \leq \theta_N \text{ where } \theta_N = \frac{N}{\ln N}$$

The Tolerance Principle (Yang)

He derives this theorem from considerations having to do with efficient search:

When is it more efficient, overall, to search through a list of items, as opposed to maintaining a rule and a list of exceptions?

I can't go into how he came up with this formula, but it has to do with Zipf's Law, which states that the frequency of any word is inversely proportional to its rank in the frequency table.

The Tolerance Principle

Let R be a rule that is applicable to N items, of which e are exceptions. R is productive if and only iff

$$e \leq \theta_N \text{ where } \theta_N = \frac{N}{\ln N}$$

The Tolerance Principle (Yang)

Extrapolating a bit, we can interpret the Tolerance Principle as marking the threshold, which we call the Yang Threshold, Y (= θ_N below) beyond which the right-side directionality of the Latinate suffixes can no longer be dismissed as exceptions to the English stress rule.

At that point, they have the potential to change the stress rule itself.

The Tolerance Principle

Let R be a rule that is applicable to N items, of which e are exceptions. R is productive if and only iff

$$e \leq \theta_N \text{ where } \theta_N = \frac{N}{\ln N}$$

The Tolerance Principle (Yang)

In applying this formula, then, we will take *e* to be the number of words with Latin suffixes.

What is *N*? Let us simply assume that *N* is equal to the total number of words in the language.

This is no doubt an oversimplification; however, it provides an initial baseline that we can hope to refine later.

The Tolerance Principle

Let *R* be a rule that is applicable to *N* items, of which *e* are exceptions. R is productive if and only iff

$$e \leq \theta_N \text{ where } \theta_N = \frac{N}{\ln N}$$

The Yang Threshold, Y

Plugging in the numbers: All words in English recorded in the *OED* up to 1400 amount to 30,568; in 1570 there are 69,364.

The natural logarithms of these numbers are 10.33 and 11.15.

$N/\ln N$ = 2,960 in 1400 and 6,223 in 1570.

		1400	1570
a.	All words (N)	30,568	69,364
b.	$\ln N$	10.33	11.15
c.	$N/\ln N = Y$	2,960	6,223

These are the numbers of words with Latin suffixes that are required to reach the Yang Threshold, *Y*.

The Yang Threshold, Y

The number of Latin suffixes in 1400 is 1,788; in 1570, 6,682.

In 1400 this number is only 60% of *Y*, not enough to affect the stress rule; these words can be viewed as exceptions.

In 1570, the number is greater than *Y*; these have crossed the Yang Threshold.

		1400	1570
a.	All words (*N*)	30,568	69,364
b.	ln *N*	10.33	11.15
c.	$N/\ln N = Y$	2,960	6,223
d.	Latin suffixes (*L*)	1,788	6,682
e.	L/Y	60%	107%

They now have the potential to cause a change to the stress rule, changing its orientation from the LEFT edge to the RIGHT one.

What about the native words?

The question arises, though: Where were the native words when all this was happening?

Wouldn't the native words have supplied counterevidence to the RIGHT-side orientation of the Latin borrowings, like they did to the earlier wave of Romance borrowings in Middle English?

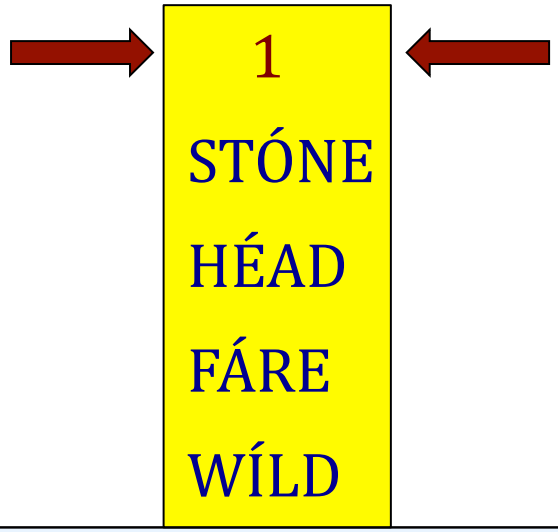
The answer is that most native words by this time were relatively short, and were therefore equally consistent with a stress rule that counts from the LEFT and one that counts from the RIGHT.

What about the native words?

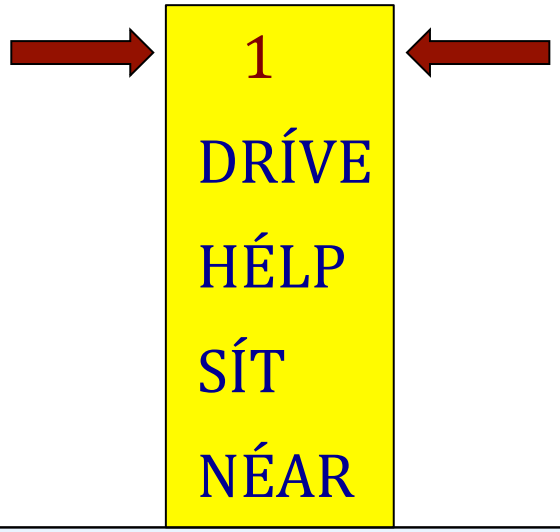
For example, many native words were monosyllables.

Obviously, a monosyllable is consistent with any stress rule, as there is only one place that stress could go.

Stress from the LEFT or RIGHT



Stress from the LEFT or RIGHT



What about the native words?

Disyllables are also ambiguous; they can receive stress by the old rule: Stress the 1st syllable from the LEFT;

or by the new one: Stress the second syllable from the RIGHT).

1st syllable from the LEFT			2nd syllable from the RIGHT		
→	1	2		2	1 ←
	DÉ	- vil		DÉ	- vil
	WÁ	- ter		WÁ	- ter
	HÍN	- der		HÍN	- der
	YÉL	- low		YÉL	- low

What about the native words?

The native words were able to prevail over the Anglo-Norman loanwords, but not over the later Latin loanwords, which were longer and more complex, and presented a type of evidence that the native words could not counter.

Related	*Example*	*Suffix*	*Related*	*Example*	*Suffix*
áccident	accidéntal	-al *(adj)*	hístory	histórify	-ify
Sícily	Sicílian	-an *(adj)*	prohíbit	prohibítion	-ion
ánimate	animátion	-ation	ínfinite	infínitude	-itude
hármony	harmónic	-ic	árid	arídity	-ity

Conclusions

The lessons I draw from this story are:

- First, that it is possible to be invaded by people who take over your country and impose their foreign language for 300 years, without these events having any lasting effect on the prosody of the native language.

- Second, that it is also possible for native speakers to voluntarily borrow enough words from a foreign language that—if they are the right kinds of words—can cause a change to the prosody of the native language.

Conclusions

- Third, that Yang's formula gives us, for the first time, a hypothesis that allows us to measure quantitatively the effect of borrowed vocabulary items on the stress rule of a language.

- Finally, this example shows how we can connect language change to learnability, thereby bringing historical linguistics to bear on an aspect of cognition.


Thank you!
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