# A synchronic and diachronic analysis of Middle English stress*

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**Kim, Yookang. 2002. A synchronic and diachronic analysis of Middle English stress.** *Studies in Phonetics, Phonology and Morphology* 8.1. 39-63. This paper is a diachronic and synchronic analysis of Middle English stress assignment. Based on Kim's (2001) Old English stress system, I attempt to account for Middle English stress change and the influence of Norman French stress patterns on Middle English. I show that OE main and secondary stress patterns are generally maintained in Middle English with exceptions of the loss of quantity-sensitive secondary stress, the introduction of the Norman French stress rule and stress variations on Norman French prefixed words. These diachronic changes are explained in the Lexical Phonology framework and Kim's OE stress system where main stress and secondary stress are assigned at different prosodic domains. **(Hankuk University of Foreign Studies)**

Keywords: Old English, Middle English, stress, prosody, syllable, foot

## 1. Introduction

There have been many earlier descriptive investigations into the Middle English (henceforth, ME) stress assignment, such as Tamson (1898), Luick (1907), Learned (1922), Langenfelt (1933), Danielsson (1948), Jespersen (1954), and others. These descriptive works were later followed by theoretical analyses of ME stress patterns in the framework of linear phonology, such as Halle and Keyser (1971), and Nakao (1984). Sasagawa (1987) examined this topic in the non-linear metrical framework and Minkova (1997) provided a brief optimality theoretic analysis of ME stress assignment. However, most of these works investigated ME stress patterns synchronically and treated a limited range of data. No previous study provided a comprehensive analysis of diachronic change from OE to ME.

In this paper, I provide a diachronic and synchronic analysis of ME stress assignment. Since the stress system in ME is influenced by Norman French (henceforth, NF), ME stress change is examined in two ways, namely compared with the Native Old English (henceforth, OE) stress system and the NF stress system. I mainly attempt to account for divergence in ME from the OE stress system and the introduction or influence of the NF stress system.

Van der Hulst (1984) and van der Hulst and Booij (1994) propose a

* I am grateful to two anonymous reviewers for their comments and suggestions. I followed their suggestions where I saw fit. However, there are still points of disagreement and I take full responsibility for all remaining errors.

"main stress first" approach, where main and secondary stresses are assigned separately at different domains. In line with this view, I argue in Kim (2001) that OE stress assignment is well explained by separating the prosodic domains of main stress and secondary stress: main stress on the syllable level and secondary stress on the foot level. My analysis of ME main stress is mainly based on the stress system and the prosodic algorithm in Kim (2001).

The diachronic change of stress in ME is accounted for through considerations of (i) variations in the classification of NF prefixes in the ME lexicon, (ii) introduction of the NF stress rule, and (iii) modification of the OE stress rules.

This paper is organized as follows: Section 2 summarizes the principal features of OE and ME stress. In section 3, I selectively reviews the previous studies of ME stress. Section 4 presents Kim's (2001) OE stress system and foot algorithm, and then provides a diachronic and synchronic analysis of ME stress. Section 5 concludes the discussion.

## 2. Data

I draw my main data from Tamson (1898), who descriptively examines ME word stress based on three literary works: *the Troy-Book, Morte Arthure*, and *Piers the Plowman*. *The Troy-Book* is written in the dialect of the West Midland in the beginning of the 15th century, *Morte Arthure* in the Northern dialect at the beginning of the 15th century, and *Piers the Plowman* in the West-Midland dialect in the late 14th century.[1]

I make a distinction between native words[2] and NF loanwords in the following discussion because they show different stress patterns.

### 2.1. Main stress assignment

A. Native words

In native or Germanic words, the main stress assignment in ME consistently agrees with that of OE in the non-prefixed words and compounds (Mossé 1952: 14, Tamson 1898: 7-55). Main stress is placed in the initial syllable as shown in (1).

(1) Main stress assignment on native non-prefixed words and compounds in ME

[1] It is not clear that Tamson (1898) considers dialectal distribution of his sources. No dialectal difference in ME stress is found in his book. With regard to the period of their composition, they were written in the late 14th and the beginning of the 15th when French influence on ME reached its peak. It can be, therefore, assumed that they can be good sources for the ME metrical pattern under the influence of NF.

[2] Native words in this paper include those borrowed in the early stage of OE.

a. Compounds
| | |
|---|---|
| hórs-fe̋t | ‘feet of a horse’ |
| bére-màn | ‘potter’ |
| pléi-fère | ‘play-fellow’ |
| dóre-tre | ‘door bar’ |

b. Non-compounds
| | |
|---|---|
| fól(o)wen | ‘to follow’ |
| chírche | ‘church’ |
| swe̋te | ‘sweet’ |
| bódi | ‘body’ |
| nósu | ‘nose’ |
| gáther | ‘to gather’ |
| kīssen | ‘to kiss’ |

OE prefixed nouns and adjectives carried main stress on their prefixes (e.g., *ánd-saca* ‘apostate’, *ánd-fenge* ‘acceptable’) while prefixed verbs had it on their root-initial syllable (e.g., *on-sácan* ‘to deny’). The main stress pattern of the prefixed words is generally preserved in ME with exceptions of words starting with the nominal prefixes *un-* and *mis-*, in which main stress is very frequently shifted to the first syllable of the root from the prefixes:

(2) Main stress on the native prefixed words in ME

a. Prefixed verbs
| | | | |
|---|---|---|---|
| a-bíde | ‘to stand up’ | bi-fálle | ‘to befall, happen’ |
| be-cóme | ‘to become’ | for-bíde | ‘to forbid’ |
| for-sáke | ‘to forsake’ | bi-táken | ‘to commit’ |

b. Prefixed nouns and adjectives
| | | | |
|---|---|---|---|
| fór-wise | ‘farseeing’ | áfter-warde | ‘afterward’ |
| óuer-hande | ‘overhand’ | présent | ‘present’ |
| sél-couthe | ‘rare, strange’ | díscrete | ‘discreet’ |
| mís-hap | ‘mishap’ or | mis-déed | ‘misdeed’ |
| mís-eulr | ‘misgovern’ | mis-táke | ‘mistake’ |
| ún-best | ‘monster’ or | un-kýndness | ‘unkindness’ |
| | | un-rédy | ‘unready’ |
| | | un-póssible | ‘impossible’ |

B. NF loanwords

In NF, stress appears either on the final syllable, or on the penultimate when the word ends in the unstressed *-e* (e.g., *garnisón, arbítre, sepultúre*). However, NF loan words in ME “progressively” adapt themselves to the stress pattern inherited from OE (Mossé 1952: 14).

In the non-prefixed NF loan words, main stress is mostly drawn to the word-initial position with some exceptions as shown in (3).

(3) Main stress on NF non-prefixed words in ME

| # of σ | NF | ME | ME Examples | Exceptions (or variants) |
|---|---|---|---|---|
| 2 | σ́(σ) | σ́σ | glórie, stórie | |
| | σσ́ | σ́σ | hónour, cíty | honóur |
| | | | pítee, cément | pitée, cémént |
| 3 | σσ́(σ) | σ́σσ | míracle, géntile | ensámple |
| | σσσ́ | σ́σσ | glórious, géneral, cúratour, élement | arbýtour maríners |
| 4 | σσσ́(σ) | σ́σσσ | fántasye | avánttwarde |
| | | | sépulture | avántaile |
| | | | órdinaunce | |
| | σσσσ́ | σ́σσσ | póssession | embúschement |
| | | | sólemmity | |
| | | | sáluacion | |
| 5 | σσσσ́(σ) | σ́σσσσ | álconomye | evángelist(e) |

Like native prefixed words, NF prefixed nouns and adjectives carry main stress on their prefixes. However, main stress often appears on the first syllable of the root.

(4) Main stress on NF prefixed nouns and adjectives

a. Nouns
cóm-pas, pré-late, ré-likes, cón-fusion, ré-pentance
(es-cháunge, de-fénce, a-ssént, in)
b. Adjectives
dís-crete, cón-fus, pré-sent, dé-vowtlich(e), án-trus, pré-sumptius
(dis-tráct, a-ppérte, in-nócent, a-pás, a-párte)

Unlike the OE and ME native verbs which have main stress on the root initial syllable (cf. (2a)), main stress assignment in NF prefixed verbs shows considerable divergence, according to the nature of the prefix as shown in (5) (Tamson 1898: 124).[3]

(5) Main stress on NF prefixed verbs

a. usually stressed prefixes
*com- (com-, col-, cor-), dis-*
b. rarely stressed prefixes
*a-(ab-, ad-), eu-, in- ,e-, es-, ex-, ob-*

[3] Furthermore, the prefix is sometimes stressed, sometimes unstressed in the same word in a considerable number of prefixed verbs. This shows that stress assignment of verbs at this period was to an extent unsettled (Tamson 1898: 129).

## 2.2. Secondary stress assignment

### A. Native words

There were two kinds of secondary stresses in OE: quantity-sensitive secondary stress assigned on the heavy syllables (ex. *ǽþelìnges* 'prince') and quantity-insensitive secondary stress assigned on the second elements of compounds (ex. *góld-wlànc* 'proud with gold', *þḗod-cỳning* 'king of a people') (Kim 2001: 29). It is not clear whether quantity-sensitive secondary stress is still maintained in native words of early ME. Campbell (1959: 35) notes that the syllables bearing secondary stress are frequently subject to change and loss in late OE, like unstressed syllables. However, Mossé (1952: 14) claims that secondary stress is still assigned on a 'post-radical' heavy syllable in long words and compounds in ME even though it is less prominent and less frequent than in OE. Moor (1951: 73) also shows some differences between unstressed vowels and those carrying secondary stress in early ME in terms of deletion of the vowel *e.* Unstressed *e* in the final or medial position of polysyllabic words is lost while *e* in the syllable containing secondary stress is maintained in the early ME period (e.g. OE *mýnecȅne* 'nun' > EME *mínechène* > *mínchène* (loss of medial unstressed vowel *–e-*) > *mínchèn* (loss of final unstressed *–e-* ) > *mínchen* (loss of secondary stress)). It is not clear when quantity-sensitive secondary stress is lost in ME.[4] However, it seems that quantity-sensitive secondary stress in ME native words is maintained in the early ME period but becomes lost toward the end of the ME period.

On the other hand, compounds still carry quantity-insensitive secondary stress on their second elements throughout the ME period (e.g., *hórs-fèt* 'feet of a horse') (Mossé 1952: 15, Halle and Keyser 1971: 108-109). Therefore, it is worth noting that OE quantity-sensitive secondary stress was lost in ME while quantity-insensitive secondary stress was still found in ME compounds. I claim in Kim (2001) that these non-uniform secondary stresses are assigned in different ways in OE. Namely, quantity-

[4] An anonymous reviewer insightfully suggests that the loss of OE quantity-sensitive secondary stress can be accounted for by the prosodic tendency to avoid two stressed syllables adjacent to each other. Since the quantity-sensitive secondary stress appears on the non-final heavy syllable immediately following the foot with main stress (after $[LL]_{Fs}$ or $[H]_{Fs}$) in OE, main stress and its following quantity secondary stress are always adjacent to each other in a word on the syllable or foot level. If it is assumed that a destressing rule, which removes secondary stress close to main stress, is active in ME, the loss of the quantity-secondary stress in ME may be phonologically explained. However, it must be noted that destressing generally affects words with the same degree of stress adjacent to each other (e.g., words having two adjacent syllables with main stresses), not the ones with different degrees of stress (e.g., words containing one syllable with main stress and another with secondary stress in sequence). For a rhythmic purpose, there is nothing wrong to have two adjacent syllables with different degrees of stress. Furthermore, it is hard to prove why the OE quantity-secondary stress began to be disallowed by a destressing rule in ME. I leave this for future study. See (14) and (15) for the relevant destressing rule I use in the paper.

sensitive secondary stress is placed on heavy syllables by the secondary stress rule, called OESSR (Old English Secondary Stress Rule) while quantity-insensitive secondary stress was derived from main stress on compounds via the trochaic parameter of the OE bimoraic foot. It is significant to observe that the non-uniformity of OE secondary stress assignment is reflected in ME stress change. Namely, only quantity-insensitive secondary stress survives in ME while the other is lost. This diachronic change of OE secondary stress assignment is accounted for in section 4.3.2.

B. NF loanwords

In most polysyllabic nouns and adjectives without prefixes, secondary stress is placed on the syllable which received main stress in NF before their borrowing into ME as illustrated in (6) (Tamson 1898: 120-121, Jordan 1974: 199, Danielsson 1948: 26-34).[5] This is the new secondary stress pattern in ME.

| (6) | NF stress pattern | ME stress pattern | loan words |
|---|---|---|---|
| | σσσ́ | σ́σσ̀ | bénesòn |
| | σσσσ́ | σ́σσσ̀ | póssessiòn |
| | σσσ́(σ) | σ́σσ̀(σ) | sépultùre |

The main features of ME stress change can be summarized as follows:
a. In ME native words, the OE main stress pattern is generally preserved with some exceptions of prefixed words showing stress variations (cf. (1) and (2)).
b. OE quantity-sensitive secondary stress is maintained in the early period of ME but lost at the end of the period. However, quantity-insensitive secondary stress is still placed on the second element of compounds.
c. NF non-prefixed loan words generally show Germanic word-initial stress patterns with some exceptions (cf. (3)).
d. Nominal and adjectival prefixes of NF loan words carry main stress with some exceptions (cf. (4)). Stress assignment on the verbal prefixes of NF loan words varies depending on the prefixes (cf. (5)).
e. In NF non-prefixed polysyllabic nouns and adjectives, secondary stress is placed on the (final) syllables which had been stressed in NF before their borrowing (cf. (6)).

Based on the main features of the ME stress change summarized above, I pose below some important questions, which are discussed in section 4.
a. How do we account for the exceptional main stress patterns (stress doublets) of derived and non-derived words in ME?
b. Is there a ME reflex of NF and Latin stress rules?

[5] This principle is called 'countertonic accentuation' (Danielsson 1948: 26-34).

c. How is the ME diachronic change of secondary stress assignment treated?
d. Are ME words lexicalized according to their stress patterns?

As far as I know, no previous works addressed all the issues presented above. This paper handles these issues and offers a comprehensive analysis of the ME stress pattern as compared with the OE stress system.

## 3. Previous analyses

There have been many earlier descriptive investigations into the diachronic transition of OE stress to ME, such as Tamson (1898), Luick (1907), Learned (1922), Langenfelt (1933), Danielsson (1948), Jespersen (1954), among others. These descriptive works are later followed by theoretical analyses of ME stress change within different frameworks, such as Halle and Keyser (1971), Nakao (1984), Sasagawa (1987), and Minkova (1997). Some key relevant works are critically reviewed below.

### 3.1. Halle and Keyser (1971)

Halle and Keyser (1971: 97-109) assume that the NF stress rule and the Latin stress rule are borrowed into ME, and they thus formulate the Romance Stress Rule,[6] which is a disjunctively ordered set of the NF stress rule and the Latin stress rule to account for the main stress on the second or final syllable of ME words. They claim that ME words are subdivided into two lexical categories with regard to the stress rule. "Unmarked" words are subject to OE stress rules and the other "marked" words are subject to the Romance Stress Rule.

However, the introduction of the Latin stress rule into ME can hardly be justified. First, Latin was not linguistically influential in ME. According to Kaplan (1932) who examined Gower's 4648 words, only 4.1% (189 words) of the words were from Latin.[7] Thomason and Kaufman (1988: 74-76) set a "borrowing scale" from category 1 of "casual contact" to category 5 of "very strong cultural pressure: heavy structural borrowing," and they place a borrowing of "prosodic and syllable-structure features, such as stress rules" into category 3 of "slightly more structural borrowing" (cf. Salmons 1992: 8). Considering the small number of Latin loan words in ME and very few number of a Latin and English bilingual group in the period, it is difficult to put Latin influence on ME in category 3 of Thomason and Kaufman's "borrowing scale". It was not until the Renaissance that Latin began to have a great influence on English.

Another argument against Halle and Keyser's claim about the introduction of the Latin stress rule into ME comes from the fact that their

[6] V → [1 stress] / [X __ Co (( [-tense V] $C^1$ ) [-tense V] Co) ].

[7] Gower is a contemporary of Chaucer, and his language is regarded as a typical literary language of the period 1350-1400 (Kaplan 1932: 397).

data is from Chaucer's works. Tamson (1898: 112) notes the difference between Chaucer and his contemporaries in terms of accentuation. He observes that Chaucer follows an accentuation based on Latin rather than on the prevailing metrical pattern of the other poets. He suggests that Chaucer's uncommon accentuation may be explained by his erudition and his knowledge of French and Latin. Therefore, it cannot be assumed that Chaucer's accentuation represents the normal stress pattern in spoken ME, and that the Latin stress rule is a part of ME phonology. The exceptional stress assignment on the second syllable of the NF polysyllabic words (e.g., *arbýtour, evángelist*) may be considered simply as a metrical convention used by a small number of well-educated poets familiar with Latin and its accentuation rather than the product of the application of the Latin stress rule.

### 3.2. Nakao (1984)

Nakao (1984) claims that the Romance stress rule completely replaces the Germanic stress patterns and most words are 'double-stressed' in late ME. For example, NF loan words with stress variations such as, *certéyn* and *cérteyn* are not stress doublets but 'double-stressed words: stressed in the final and initial syllables like *cértèyn*. He argues that double stresses are derived by the cyclic application of two stress rules in sequence: Romance Stress Rule (RSR) to assign main stress in the word final syllable and the Stress Retraction Rule (SRR) to retract word-final stress to a word initial syllable.[8] Namely, after stress is assigned in the final syllable by RSR, stress is then retracted to the initial syllable by SRR and then the final stress becomes secondary stress. After each morphological derivation, the two stress rules apply cyclically in the same order.

However, it is hard to agree that every ME word carries secondary stress in the final syllables. As shown in (6), only polysyllabic loan words from NF (non-prefixed words) carry secondary stress in the (word final) syllable where main stress was placed before their borrowing (ex. *bénesòn*). Nakao (1984) provides some metrical and phonological evidence for the presence of stress in the word final syllables. However, his arguments are refuted by Minkova (1997), who provides phonological, metrical and sociolinguistic evidence against final stress in ME. Minkova rightly points out that Romance stress pattern (final stress) only appears in a limited range of NF loan words and thus stress-shifting in ME is 'restricted lexically' (1997: 162). In particular, if the RSR assigning stress in the word final syllables really replaced the Germanic initial stress rule in late ME, there would be no way to account for motivation of vowel reduction in the word final syllables in ME (see Minkova 1997: 146-153 for the relevant discussion).

[8] Nakao's two stress rules are basically the same as Halle and Keyser's (1971) stress rules.

### 3.3. Minkova (1997)

Minkova (1997) offers an OT analysis of ME main stress assignment. She claims that OE initial stress pattern is maintained in ME and the Romance stress pattern appears in a restricted set of lexical items and much less frequently than previously assumed. Therefore, in her OT analysis, there are two kinds of constraint rankings: a native constraint ranking and a foreign (late Latin) constraint ranking. Following Itô and Mester's (1995) model of lexical strata, Minkova hypothesizes that there exist two distinct 'Germanic vs. Latinate (or foreign) lexical layers' in the ME lexicon. She continues that native and 'already assimilated' (and thus initially-stressed) loan words belong to a core Germanic stratum and the native constraint ranking produces initial stress on these words. On the other hand, Romance words maintaining final stress belong to a peripheral foreign stratum where native constraints are usually 'relaxed', and their final stress pattern is enforced by the foreign constraint ranking. She claims that "the boundaries between all strata allow fluctuation" (1997: 153). She proposes the native and foreign constraint rankings for ME main stress pattern as in (7).

(7) ME constraint rankings for stress (Minkova 1997: 144)

| a. Native ranking | b. Foreign ranking |
|---|---|
| Root Stress | Root Stress |
| Initial Prominence | Nonfinality |
| Nonfinality | WSP |
| WSP | Initial Prominence |
| Rightward Main Stress | Rightward Main Stress |

It can be seen in (7) that distinction between two rankings or two stress systems in ME involves in the tension between Initial Prominence and two constraints, namely Nonfinallity and WSP. In the native ranking, Initial Prominence outranks Nonfinality and WSP while it is ranked lower than the other two constraints in the foreign ranking. Minkova argues that the rivalry of the constraints is only confined to 'a marked (peripheral) set of lexical items' and thus Initial Prominence is ranked high throughout the ME period.

I agree to Minkova's argument that OE main stress pattern is generally maintained in ME and Romance stress pattern (final stress) appears less frequent than previous works assumed. As exemplified in (3) and (4), most NF words show OE initial stress patterns even though there are some exceptions (e.g., stress doublets) to have final stress. Furthermore, I have no objection with regard to Minkova's classification of lexical items based on Ito and Mester's model.[9] Considering the fact that final stress is mainly

[9] In fact, her lexical classification is basically the same with Halle and Keyser's (1971), in that there are two groups of lexical items in ME in terms of their stress pattern: marked or

found in Romance loan words which are not assimilated into native phonological patterns and that such words are not dominant in ME, it is not wrong to assume that foreign constraint ranking only plays a role in a peripheral lexical items composed of Romance loan words.

However, there is one problem which remains in her analysis. Minkova presents only Latin constraint ranking as a foreign constraint ranking without considering a NF constraint ranking. In particular, the foreign ranking of constraints in (7b) cannot produce a final stress of NF disyllabic loan words like *vergín* because Nonfinality is ranked high. In Minkova's ME stress systems, it is not clear how to account for the presence of final stress in NF disyllabic loan words.[10]

## 4. Synchronic and diachronic analysis of ME stress change

Before offering the analysis of stress change from OE to ME, prosodic algorithm and OE stress system need to be presented. As described in section 1, my theoretical assumption and framework for the diachronic analysis are based on Kim (2001) summarized below in the following section.

### 4.1. Foot algorithm and OE stress system (Kim 2001)

Van der Hulst (1984) and van der Hulst and Booij (1994) propose that main and secondary stresses are assigned separately at different domains in a language where their assignment operates differently, and consequently the algorithms of the assignment differ. In Kim (2001), I observe that main stress assignment and secondary stress assignment in OE operate differently: main stress is sensitive to morphological information and secondary stress is sensitive to phonological structure. In more detail, OE main stress is placed on root-initial syllables (e.g., *stánas* 'stones'), the initial syllables of nominal or adjectival prefixes (e.g., *ánd-saca* 'apostate, *ún-synnig* 'innocent'), or the stem-initial syllables of prefixed verbs (e.g., *on-sácan* 'to deny'). Namely, main stress assignment in OE is morphologically determined regardless of the phonological structure on the morphemic or word level. The weight of stressed syllables is not considered in the OE main stress assignment. For example, main stress is found on a light syllable (e.g., *onsácan* 'deny', *cýning* 'king') or on a heavy syllable (e.g., *aþéncan* 'devise', *stā́nas* 'stones'). On the other hand, OE main stress assignment is a matter of whether a word has a prefix or not, and which prefix is attached to the word if it has one. By contrast, OE secondary stress is quantity-sensitive: it is placed on the non-final heavy syllables immediately

peripheral items and unmarked or core items.

[10] Minkova does not present NF constraint ranking for final stress of NF disyllabic loan words even though she claims that ME stress system consists of Latin, Anglo-Norman and Germanic stress systems (1997: 140).

following the foot with main stress (e.g., *æþelìnges* 'a prince's'),

In line with van der Hulst (1984) and van der Hulst and Booij's (1994) view, I argue in Kim (2001) that main stress and secondary stress in OE are assigned at different domains. Namely, morphologically-sensitive main stress is assigned in the domain of the syllable and phonologically-sensitive secondary stress is placed in the domain of a higher prosodic unit, the foot.

In the analysis of morphologically-sensitive OE main stress, I appeal to lexical phonology. I claim that stressed prefixes are attached to their stems at level 1 before the stress rule applies and stressless prefixes at level 2 after the stress rule applies. The division of the OE lexicon and the main stress rule can be summarized as in (8).

(8) a. OE main stress assignment in the lexicon (Kim 2001: 39)

Level 1
Main stress assignment
Affixation

Level 2
Main stress assignment
Affixation
Compounding

b. Germanic Main Stress Rule (GMSR)
$[\sigma \quad \rightarrow [\sigma_s$

In the analysis of OE secondary stress assignment, I propose that the foot in Germanic is a bimoraic trochee and claim that secondary stress in OE is assigned in the domain of the bimoraic foot. The parameters of the foot can be described in (9).

(9) The parameters of the foot in Germanic (Kim 2001: 12)
a. Feet are bimoraic.
b. Feet are parsed from left to right.
c. Feet are left-dominant both at foot-level and at word-level.[11]
d. Foot construction is iterative.
e. Degenerate feet are not allowed.
f. Stray moras or syllables can be refooted by some phonological process.

[11] The parameter governing dominance at word level can be derived indirectly, as at foot-level. Word-level labeling may refer to the internal structure of feet in accordance with the Metrical Locality principle (Hammond 1982) which states that rules may refer only to elements at the same or adjacent layers of metrical structure.

According to Kim (2001), after foot construction, secondary stress is assigned to the foot. To account for secondary stress assignment on the foot level, I postulate that main stress assigned on the syllable level percolates into the foot level by the *Stress Percolation Rule* formulated in (10).[12]

(10) Stress Percolation Rule (SPR) (Kim 2001: 43)

$$\begin{array}{ccc} F & & F_s \\ | & \rightarrow & | \\ \sigma_s & & \sigma_s \end{array}$$

After the SPR applies, secondary stress is computed on the foot level. I observe non-uniform features of OE secondary stress assignments: quantity insensitive secondary stress on compounds and quantity sensitive secondary stress on the heavy suffixes. I claim that the former is automatically computed by the troachaic parameter ((9c)) of the foot between two main stresses percolating on the foot level from the syllable level and the quantity sensitive secondary stress on the heavy stems or suffixes is placed by a stress rule, called the OESSR. Some crucial derivations are exemplified in (11).

(11) Non-uniformity of OE stress assignment (Kim 2001)

a. Compounds (*góldwlànc* 'proud with gold')
(gold)σ (wlanc)σ → (gold)$\sigma_s$ (wlanc)$\sigma_s$ (GMSR at level 1) →
(gold)$\sigma_s$ + (wlanc)$\sigma_s$ (compounding at level 2) →
[(gold)$\sigma_s$]$_F$[(wlanc)$\sigma_s$]$_F$ (foot formation) →
[(gold)$\sigma_s$]$_{Fs}$[(wlanc)$\sigma_s$]$_{Fs}$ (SPR) →
[(gold)$\sigma_s$]$_{Fs}$[(wlanc)$\sigma_s$]$_{Fw}$ (trochaic parameter)

b. non-compounds (*æþelìnges* 'prince, gen.sg.')
(æ)σ(þe)σ(ling)σ → (æ)$\sigma_s$(þe)σ(ling)σ (GMSR at level 1) →
(æ)$\sigma_s$(þe)σ(ling)σ + (es)σ (suffixation at level 2) →
[(æ)$\sigma_s$(þe)σ]$_F$[(lin)σ ]$_F$[ (ges)σ]$_F$ (foot formation) →
[(æ)$\sigma_s$(þe)σ]$_{Fs}$[(lin)σ ]$_F$[ (ges)σ]$_F$ (SPR) →
[(æ)$\sigma_s$(þe)σ]$_{Fs}$[(lin)σ ]$_{Fw}$[ (ges)σ]$_F$ (OESSR)

[12] An anonymous reviewer points out that the SPR is not needed in the analysis because main stress information on the syllable level can automatically be detected on the foot level without any percolation process, when secondary stress is computed. If it is really true that main stress assigned on the syllable level can appear on the foot level without any phonological process, this analysis may be made simpler by removing the need for the SPR. However, it is hard to blindly assume that any prosodic information on the lower level can automatically be detected on the higher level in the prosodic hierarchy. In particular, in this analysis where main and secondary stresses are computed in the different prosodic domains, there must be something by which different prosodic units can interact with each other. That is, I claim, the SPR, which plays a similar role as the projection rule projecting the head into a higher line in the metrical grid theory (Idsardi 1994).

The next section shows how ME stress change can be accounted for in the foot algorithm and the stress system shown above.

## 4.2. ME main stress assignment

### 4.2.1. Native words

Let us first consider main stress assignment of ME native words in (1) and (2). In general, OE main stress pattern is preserved in ME. Namely, nominal and adjectival prefixes are stressed while prefixed verbs carry main stress on the root initial syllables. Therefore, it can be argued that there is little change in the application of the GMSR in the lexicon. Namely, nominal and adjectival stressed prefixes are affixed at level 1 and verbal unstressed prefixes at level 2, and the GMSR still plays a role in ME phonology.

However, some prefixed nouns starting with nominal prefixes *un-* and *mis-* show stress variations: main stress appears on the prefixes or on the root initial syllables. Since these negative prefixes are attached to nominal stems, they carried main stress in OE. However, in ME, main stress is often shifted to the first syllable of the roots (e.g., *míshap* 'mishap' vs. *misdéed* 'misdeed' and *únbest* 'monster' vs. *unkýndness* 'unkindness'). The stress variation in the words starting with *un-* and *mis-* can be accounted for by assuming that the lexical level of their affixation in the lexicon changes from level 1 to level 2 in ME. In more detail, when these prefixes are attached to their stems at level 1, they are assigned main stress by the GMSR as they were in OE. By contrast, when they are affixed at level 2, GMSR does not apply to them. However, as these prefixes are still stressed in a limited number of words, the shift of the lexical level of their affixation must be regarded as change in progress in this period. Therefore, the exceptional stress patterns of prefixed words are interpreted as the by-products of variation of lexical levels for their prefixation.

### 4.2.2. NF loan words

#### 4.2.2.1. NF non-prefixed words

In the NF non-prefixed words in (3), main stress is generally placed on the first syllable of these words (e.g., *glórie, stórie*), with some exceptions in which the second or final syllable carries main stress (e.g., *arbýtour or honóur*). The words carrying main stress on their final syllable follow the NF stress pattern and the words carrying main stress on their second syllable show the Latin stress pattern. I have already argued in 3.1 that the Latin stress pattern appearing on the second syllables of NF polysyllabic words (e.g., *arbýtour*, *evángelist*) must be considered as the metrical convention used by a small number of well-educated poets familiar with Latin and its accentuation rather than as the product of the application of

the Latin stress rule. On the other hand, it has been agreed that the NF stress rule plays a role among the NF loan words in ME. Compared with Latin, the French influence on ME is substantial in terms of the number of loan words and their linguistic changes. Thomason and Kaufman (1988: 205) place NF borrowing into ME between category 2 and 3 of their borrowing scale, where prosodic changes can occur. Therefore, I assume that the NF stress rule is introduced into ME phonology and it assigns final stress on NF loan words which have not completely assimilated into the native stress pattern. However, as discussed above, since the final stress appears in a limited number of NF loan words, the NF stress rule does not play a role as the regular metrical rule but as the lexical rule which affects NF loan words.

How can the NF stress rule in ME be formulated? As described in 2.1, the NF stress rule assigns main stress either on the final syllable, or on the penultimate if a word ends with *–e*. It is noted that unlike morphologically-sensitive main stress assignment in OE, the NF stress assignment ignores the morphological structure of the words to which it applies. Instead, main stress is blindly placed in the word final position with the only exception of words ending with *–e*. Therefore, I claim that the NF stress rule applies in the lexicon after all morphological processes have ended. Since this stress rule affects the word final syllables regardless of their weight, it applies in the weight-insensitive way on the syllable level like GMSR before foot construction. In addition, the NF rule applies to a limited number of ME words (NF loan words) to assign main stress on their last syllables. Therefore, it is proper to assume that this rule applies in the lexicon after all affixations or compounding occurs. The final *–e* can be treated as extrametrical because it is always ignored in the prosodic computation. The NF main stress rule is formulated as in (12).

(12) NF Main Stress Rule (NFMSR) in ME

$$\sigma\ \langle e\rangle] \quad \rightarrow \quad \sigma_s\langle e\rangle]$$

As native words carry initial main stress, thus rarely showing stress doublets, the application of the NFMSR in (12) is limited to NF loan words. I claim that NF loan words in ME are subject to two main stress rules: GMSR and NFMSR. The GMSR assigns main stress on the first syllable of the words and then the NFMSR applies to assign main stress again on the final syllable.[13]

[13] An anonymous reader suggests that main and secondary stresses in ME can be derived together on the foot level by the main stress rule and the destressing rule without having the NFMSR. In more detail, the GMSR assigns main stress on the initial syllable within a foot (e.g., [hónour]$_F$, [mín]$_F$[chén]$_F$, [[béne]$_F$[són]$_F$]) and then the second main stress on *minchen* is removed by the destressing rule (*mínchén* > *mínchen*) and the one on *beneson* becomes secondary stress by the trochaic parameter without being affected by the destressing rule (*bénesón* > *bénesòn*). However, I am not convinced by this suggestion for a couple of reasons. First, without having the NFMSR, it is hard to account for stress variations or doublets

(13) Main stress assignment on NF loan words in ME

| a. disyllabic words | | | b. polysyllabic words | |
|---|---|---|---|---|
| hónour ~ honóur (stress doublet) | | | bénesòn | |
| ho.nour | [σ σ] | Syllabification | [σ σ σ] | be.ne.son |
| hó.nour | [$\sigma_s\sigma$] | GMSR | [$\sigma_s$ σ σ] | bé.ne.son |
| hó.nóur | [$\sigma_s\sigma_s$] | NFMSR | [$\sigma_s$ σ $\sigma_s$] | bé.ne.són |
| hó.nour | [$\sigma_s$ σ] | Destressing | _____ | |
| ~ ho.nóur | [σ $\sigma_s$] | | | |

(13) shows that the application of the two stress rules produces two stressed syllables in the same word: initial and final syllables. Let us look at the output of the disyllabic word in (13a) where two stressed syllables are close to each other. Metrically, it is unnatural to have two stressed syllables adjacent to each other. It has been proposed in Hammond (1984) and Prince (1983) that two metrically prominent syllables are not allowed to be adjacent to each other in many languages, and that one of the two stresses is removed to resolve stress clash. In most cases in ME, second main stress on the final is removed and the first initial stress appears on the surface (e.g., *hónour, cíty*). Therefore, the *Destressing Rule* can be formulated as in (14).

(14) Destressing Rule in ME (tentative)

$[\sigma_s\sigma_s] \rightarrow [\sigma_s\,\sigma]$

The *Destressing Rule* in (14) removes the second main stress immediately following main stress in the NF disyllabic words in ME. I assume that this rule applies on the syllable level within a word, not crossing a word boundary because destressing does not occur to a compound (e.g., $[\text{hórs}]_F + [\text{fét}]_F$ (no destressing) → $[\text{hórs}]_F + [\text{fèt}]_F$ (the trochaic parameter)).

However, it can be noted in (13a) that the first stress can be removed and thus the second appears on the surface (e.g., *honóur*, *certéyn*). Even though NF loanwords having main stress in the final are not dominant in ME, they are not uncommon. Therefore, the *Destressing Rule* (14) must be modified as in (15).

(15) Destressing Rule in ME

$[\sigma_s\sigma_s] \rightarrow [\sigma_s\,\sigma]$ or $[\sigma\,\sigma_s]$

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appearing on the NF words (e.g., *cérteyn* ~ *certéyn*). Furthermore, in line with this view, it is not clear why secondary stress appears only on the syllable having been stressed in NF (e.g., *bénesòn*), while it is absent on the corresponding native polysyllabic (non-compound) words (e.g., *fólowen*) (See (6)). In addition, it is not clear to me why *beneson* does not undergo destressing while *minchen* does even though they have the same foot structure.

The variations in structural change (SC) of the *Destressing Rule* in (15) result in stress doublets among the NF disyllabic words in ME. Therefore, ME stress doublets are not a matter of competition between native and NF stress rules, but a matter of variation of the *Destressing Rule* in this analysis. Stress doublets are purely phonologically determined.

This way of treating ME stress doublets has some explanatory advantage. Above all, we can avoid some difficult debate on indeterminacy of two stress rules for different stress patterns of NF loan words. As described above, a large portion of NF loan words is assimilated with a native stress pattern while a number of NF loan words still appear to have their own final stress pattern. In such a gradual process of stress assimilation of NF loan words, stress doublets might be produced. This assimilation process of NF loan words is interpreted as a shift between two lexical groups in Minkova (1997) and Halle and Keyser (1971). This line of hypothesis is problematic because stress pattern is the only criterion for classification of lexical items. Furthermore, in line with such a view, it is not easy to determine precisely which lexical group a NF loan word belongs to at a specific stage because the stress assimilation process occurs gradually and thus even the same word shows initial and final stress in the same poetic text (e.g., stress doublets). If we simply attribute these stress variations of NF loan words to individual speaker's variations and assume that these words originally had Romance stress patterns and then became interpreted into the native stress system by ME speakers, it is hard to account for why the same words appear to have initial or final stress in the same text written by the same author. Finally, in such a case, there is no choice but to stipulate that main stress of NF loan words are completely lexicalized and every NF loan word may be idiosyncratically marked in terms of their stress pattern in the lexicon. Stress doublets are still exceptions produced by indeterminacy of such a lexical grouping.

By contrast, this analysis eliminates the need for such a problematic lexical grouping of NF loan words by assuming that both Germanic and NF main stress rules apply to them. Stress variations of NF loan words or stress doublets are phonologically accounted for by the variation in terms of the application of the *Destressing Rule* without relying on the problematic lexical grouping. Furthermore, my assumption of positing two stress rules in the lexical representation of NF loan words can be supported by the empirical fact that the NF polysyllabic (unprefixed) words in (6) carry secondary stress on the (final) syllable where main stress was assigned in NF (e.g. *bénesòn*). If it is true that the only one of the two stress rules apply to these words, there is no way to explain why secondary stress appears only on the syllable eligible for main stress assignment in the NF stress system even though ME native words do not have such a final secondary stress pattern. I will discuss secondary stress assignment on the NF polysyllabic words below in section 4.3.2.

Next, let us return to the polysyllabic word in (13b). Unlike the

disyllabic word in (13a), stress clash is not produced by the application of the two stress rules because the two stressed syllables are not adjacent to each other. As briefly mentioned above in (6), in such long NF loan words, secondary stress appeared on their final syllables having been stressed in NF and their first syllables were assigned main stress (e.g., *bénesòn*). I show in the following section how the final stress is weakened to secondary stress.

4.2.2.2. NF prefixed words

Let us examine main stress assignment on the NF prefixed loan words in (4) and (5). Compared with the NF non-prefixed words, these words show more complex and unstable stress patterns and a considerable degree of stress variation. First, prefixed nouns and adjectives in (4) are frequently stressed on their prefixes (e.g., *cómpas, prélate*) but, less frequently, main stress appears on the first syllable of their roots (e.g., *eschánge, defénce*). Second, prefixed verbs show a considerable stress variation according to the nature of their prefixes.[14] In these words, main stress is assigned on the verbal prefixes (e.g., *cónfusede*) or on the first syllable of the roots (e.g., *excépte*).

Kim (2001) claims that, in OE, stressed prefixes (mostly nominal and adjectival) are attached at level 1 and then undergo the main stress rule (GMSR) while unstressed prefixes (mostly verbal) are concatenated at level 2 after the main stress rule applies. Since the OE main stress pattern is maintained on the native words, it was assumed in section 4.2.1 that the OE metrical system still works in the stress assignment of ME native words.

After NF words are borrowed into ME, they are necessarily incorporated into the ME lexicon where affixation and the main stress rule interact. In the process of their adaptation into the ME lexicon, it should be determined at which level each prefix of the NF loans is attached to its stem. When NF prefixes become familiar to ME native speakers and their morphological categories are clearly identified, the levels for the affixation of the prefixes are easily determined based on the native system, which was inherited from OE and that is still active for ME native words. The process can be illustrated in (16).

(16) Lexical categorization of NF prefixed words and main stress assignment in ME[15]

[14] However, prefixed verbs from NF tend to have the final stress pattern more consistently. (Minkova 1997: 143).

[15] As shown in (8a), Kim proposes that GMSR applies cyclically at level 1 and level 2: Level 1- GMSR> Affixation (stressed prefixes); Level 2- GMSR > Affixation (stressless previxes). The first application of the GMSR at level 1 assigns main stress on the stems and the second occurrence of the GMSR at level 2 place main stress on the prefixes which take place at level 1. The cyclic application of the GMSR produces two main stresses on compounds and prefixed nouns and adjectives, and the second main stress becomes secondary

| | Nouns | | Adjectives | | Verbs | |
|---|---|---|---|---|---|---|
| | a | b | c | d | e | f |
| Level 1 Affixation<br><br>GMSR | com + pas<br>cómpas | fénce | dis + crete<br>díscrete | tráct | con + fusede<br>cónfusede | cépte |
| Level 2<br><br>Affixation | | de + fénce | | dis + tráct | | ex + cépte |
| Surface form | cómpas | defénse | díscrete | distráct | cónfusede | excépte |

Like ME native nominal and adjective prefixes, the nominal prefix *com-* of *cómpas* in (16a) and the adjectival prefix *dis-* of *díscrete* in (16b) are attached to their stems at level 1 and assigned main stress by the GMSR. This is the general way in which NF prefixed nouns and adjectives adapt themselves into the ME lexicon when their morphological categories and meanings are identified by ME native speakers.

On the contrary, the noun *defénce* in (16b) and the adjective *distráct* in (16d) show a different behavior in their prefixation. Their prefixes are concatenated at level 2 and thus are not assigned main stress because the GMSR applies prior to their affixation. Even though these unstressed nominal and adjectival prefixes are not common in ME, they appear in ME literature. Why are these prefixes assigned at level 2 as a place for their attachment to the stems rather than at level 1, which is the general place for affixation of nominal and adjectival prefixes?

Tamson (1898: 110-111) observes that ME nominal and adjectival prefixes borrowed from NF are unstressed either (i) when they are apparently meaningless (e.g., *escháunge* (*change*), *defáute* (*faute*)), or (ii) when they are derived from their corresponding verbs (e.g., *defénce* from *defénden*, *assént* form *assénten*, *distráct* from *distrácten*). If a prefix loses its meaning and thus it is no longer analyzable by ME speakers, the meaning of the word can be identified only by reference to its stem. In such a case, there can be some difficulty in categorizing the semantically-

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stress on the foot level by trochaic parameter of the foot. In such a way, Kim accounts for quantity-insensitive secondary stress on prefixed nouns and adjectives.

The reason why the GMSR needs to apply at level 1 before affixation in OE is because OE prefixed nouns and adjectives carry secondary stress on the stem initial syllables regardless of the weight of the syllables. If the GMSR applies after affixation of the prefixes at level 1, there would be no way for nominal and adjectival stems to obtain stress. On the other hand, I have no empirical evidence for the presence of quantity-insensitive secondary stress in the stem initial syllables of ME prefixed nouns and adjectives. Therefore, in ME, there is no need for the GMSR to apply before affixation at level 1. If the GMSR applies after affixation at level 1, nominal and adjectival prefixes acquire main stress at level 1 while their stems do not. In addition, the GMSR does not apply at level 2, otherwise it would always be vacuous: Level 1- Affixation > GMSR; Level 2- GMSR (always vacuous) > Affixation. Therefore, as shown in (16), I claim that the GMSR applies once after affixation at level 1 in ME lexicon.

unclear prefixes among ME speakers. This speculation can be supported by the sociolinguistic situation of the ME period, in that there was a very small number of French speakers or bilinguals in the ME period and their knowledge of French was not good (Thomason and Kaufman 1988: 269). Therefore, it may be safer to assign such prefixes at level 2 so that stress is placed on the stem rather than on the meaningless prefix.

In the case of deverbal nouns or adjectives, their word category also might not be clear to English-speaking people with little knowledge of French and even to a bilingual group with incomplete knowledge of French. I claim that it is this ambiguity of these deverbal prefixes in terms of word category that causes the failure of assignment at the expected level 1. They could not be distinguished from their corresponding and more frequently used verbal prefixes that are attached at level 2.

Now let us turn to the prefixed verbs in (16e) and (16f). Like unstressed verbal prefixes of ME native words, the verbal prefix *ex-* of *excépte* in (16f) is attached at level 2 and thus not assigned main stress. On the other hand, the verbal prefix *con-* of *cónfusede* in (16e) is concatenated at level 1 and then assigned main stress. As shown earlier in (5), main stress assignment in verbs borrowed from NF shows considerable divergence, depending on the nature of the prefixes. Tamson (1898: 128-129) observes that, as seen in the nominal and adjectival prefixes discussed above, meaningless verbal prefixes are unstressed (e.g., *de(fénden)*, *dis(pórt)*), and that the stressed verbal prefixes like *con-* in (16e) are influenced by their corresponding nouns and adjectives (e.g., *cómford*, *cómpast*) from which they have been derived. Given the fact that the native verbal prefixes in ME are generally unstressed and meaningless morphemes tend to be unstressed, it is natural that the meaningless verbal prefixes of NF loan-words are attached at level 2 where main stress is not assigned. Main stress assignment on the prefixes of the verbs that are derived from nouns and adjectives can be accounted for by considering ME speakers' inability to recognize their word category. The derived verbs may be perceived by the speakers with little or incomplete knowledge of French as if they belonged to the same word category with their corresponding nouns and adjectives.

In addition, it has been observed that the NF verbal prefixes beginning with a vowel are mostly unstressed while those beginning with a consonant are generally stressed (Tamson 1898: 128-129). It is not easy to find the reason for the asymmetry of stress assignment between the words beginning with a consonant and those with a vowel. As one possibility, Learned (1922: 714-717) considers French emphatic or emotional words which have a special accent in French: A very conspicuous stress falls upon the first syllable of words beginning with a consonant (e.g., *mérci, párdon*), and on the second syllable of words beginning with a vowel (e.g., *attétion*). According to him, words spoken emphatically or with emotional stress (e.g., *pardon, merci*) tend to stand out in the sentence and thus be easily caught by the hearer. Therefore, he continues that NF emphatic

words can be caught and understood after many repetitions by the common folk of England with little knowledge of French in French conversation in the ME period, and that the emphatic accent patterns are easily recognized by the English.

I speculate that the special accentuation on French emphatic or emotional words is reflected in the process where the verbal prefixes of NF loan words are categorized into the lexical levels of the ME lexicon. All things being equal, the prefixes beginning with the vowels that have been unstressed in NF are assigned at level 2 and those with consonants that have been stressed in NF are placed at level 1.

In summary, the main stress patterns of ME native and NF loan words were accounted for on the syllable level in the ME lexicon. The GMSR was still active in ME lexicon, assigning main stress on the initial syllable of the relevant lexical domain. The exceptional stress pattern of native words (e.g., prefixed words stating with *mis-, un-*) was interpreted as variation in the process of assigning lexical levels for their prefixation. With regard to the NF loan words, all of them underwent two stress rules (GMSR and NFMSR) in the lexicon and one of the two stresses (primarily the second one) was lost by the *Destressing Rule* (15) in disyllabic words. Stress variations or stress doublets were produced by variations in the application of the *Destressing Rule*. Therefore, there was no need for lexical grouping of NF loan words in terms of their stress patterns (cf. Halle and Keyser 1971 and Minkova 1997). It was argued that the Latin stress rule did not play a role in ME phonology and the penultimate stress on polysyllabic words was interpreted as a product of metrical convention employed by a small number of learned people who knew Latin. Prefixed words borrowed from NF were assimilated with native prefixed words with regard to their lexical derivations and stress assignment. The assimilation process occurred gradually and it was interpreted as a process for classification of prefixes on lexical levels for their affixation. However, the exceptional stress pattern arose in the case of some prefixes of which morphological categories became unclear to ME speakers through their semantic reduction (meaningless prefixes) or morphological derivations (derived nouns or verbs). When morphological categories of such NF prefixed words could not be identified, their lexical levels were not consistent with native systems and thus exceptional stress patterns appeared.

### 4.3.2. Secondary stress assignment

#### 4.3.2.1. Native words

As discussed above in section 2, OE quantity-sensitive secondary stress on heavy suffixes and stems was preserved in the early ME period and became lost toward the end of the period. However, quantity-insensitive secondary stress in compounds was maintained throughout the ME period.

In Kim's OE stress system, the quantity-sensitive secondary stress is assigned by the OESSR while the other secondary stress is computed by the trochaic parameter of the foot (cf. (11)). Therefore, I claim that the OESSR having assigned quantity-sensitive secondary stress on heavy syllables is lost in the late ME period. However, the other quantity-insensitive secondary stress is still assigned on the second element of compounds on the foot level by trochaic prominence of the bimoraic foot throughout the ME period as in OE.

The diachronic change in ME secondary stress assignment described above reveals some important consequences of this analysis. Note that only quantity-sensitive secondary stress disappears while quantity-insensitive secondary stress is preserved. If OE secondary stress is computed all together on the same level with main stress or if the two kinds of OE secondary stresses are derived by the same rule or the same process, it is hard to diachronically account for why the only quantity-sensitive secondary stress disappear in ME while quantity-insensitive secondary stress and main stress are preserved.

For example, in OT, diachronic change is a constraint re-ranking. Therefore, there should be a change of the OE ranking in ME because of the change of secondary stress assignment. Since the OE quantity-sensitive secondary stress is lost in ME, the change of the OE constraint ranking may be involved in WSP and Nonfinality, which play a role to enforce quantity-sensitive secondary stress on non-word final heavy syllables in OE (see the summary of Minkova's OT analysis in (7)). Since these constraints are also responsible for main stress and secondary stress on compounds, it is not explanatorily adequate to state that ME stress change is the change of the ranking involved in the two constraints. The empirical fact that the only quantity-sensitive secondary stress assignment is lost in ME is not still accounted for in such a framework because the change of the ranking is not exclusively related with the quantity-sensitive secondary stress.

By contrast, in this analysis, the loss of the OE quantity-sensitive secondary stress in ME is the loss of the OESSR which was the only stress rule responsible for the quantity-sensitive secondary stress assignment in OE. The preservation of the OE metrical system and the other rules (GMSR and trochaic prominence of the bimoraic foot) in ME accounts for maintenance of the other stress patterns in ME.

In conclusion, the loss of quantity-sensitive secondary stress and the preservation of quantity-insensitive secondary stress in ME imply that two kinds of secondary stress existed in OE and they were derived in different ways. This analysis captures the synchronic and diachronic aspect of ME secondary stress.

4.3.2.2. NF loan words

Let us return to the NF non-prefixed loan word in (13b) where secondary

stress appears on the syllable stressed in NF before their introduction into ME.[16] I argued that the application of the two main stress rules (GMSR and NFMSR) produced two stressed syllables on the NF non-prefixed words: one on the initial syllable and the other on the final. In the disyllabic word in (13a) where the two stressed syllables are adjacent to each other, destressing process occurs to avoid stress clash. In the case of polysyllabic word in (13b), stress clash does not occur and, instead, the second stress is reduced to secondary stress.

The foot is constructed on the syllable level before secondary stress assignment. It is shown in (17) that foot structures are constructed on the syllable structures of the polysyllabic word in (13b) and then main stress is assigned on the foot.

(17) Foot construction and main stress assignment on the NF non–prefixed polysyllabic words in ME

| | |
|---|---|
| $(be)\sigma_s\,(ne)\sigma(son)\sigma_s$ | (after main stress assignment) → |
| $[(be)\sigma_s\,(ne)\sigma]_F[(son)\sigma_s]_F$ | (Foot construction) → |
| $[(be)\sigma_s\,(ne)\sigma]_{Fs}[(son)\sigma_s]_{Fs}$ | (SPR) → |
| $[(be)\sigma_s\,(ne)\sigma]_{Fs}[(son)\sigma_s]_{Fw}$ | (Trochaic parameter) |

It is shown above in (17) that two main stresses percolate into the foot level by the SPR and the second main stress becomes secondary stress by the trochaic parameter of the foot. Therefore, secondary stress assignment on the NF polysyllabic non-prefixed loan words is accounted for in the Germanic stress system inherited from OE without any additional stress rule. Namely, it is derived from one of multiple main stresses having been assigned on the syllable level as in compounds. The only difference between compounds and NF polysyllabic words with regard to their secondary stress assignment lies in how their two main stresses are derived. In compounds, the GMSR places two main stresses on each element before compounding, while GMSR and NFMSR are responsible for main stresses in the initial and final syllables, respectively in the NF polysyllabic words. After main stresses percolate into the foot level, secondary stress is simply derived by the left dominant feature of the bimoraic foot both in compounds and NF trisyllabic words.

This analysis of secondary stress assignment in NF non-prefixed loan words has some explanatory and theoretical advantages. First, there is no need to have an additional stress rule for secondary stress on the final syllable of NF trisyllabic words. Therefore, this analysis is theoretically

[16] As Tamson (1898: 120-121) and Danielsson (1948: 26-24) point out, among the NF loan words in ME, secondary stress assignment on the syllable stressed in NF appears only on the non-prefixed nouns and adjectives. It is not clear why secondary stress does not appear on the corresponding syllable of the NF prefixed words or non-prefixed verbs in ME. I leave this issue for study in future.

economical. Second, this analysis accounts for why final secondary stress only appears in NF polysyllabic loan words. Namely, the final secondary stress must be found only in NF loan words because it is derived from main stress having been assigned by the NFMSR which applies only to NF loan words. In addition, it must appear only in polysyllabic words because NF disyllabic words undergo the *Destressing Rule* on the syllable level, thus to have the only one main stress. These advantages are only made possible in the stress system where main and secondary stresses are assigned in the different domains. In the metrical system where all stresses are computed together in the same domain or by the same constraint ranking, the consequences described above can hardly be obtained.

## 5. Conclusion

The diachronic changes of ME stress change can be summarized as follows:

a. Preservation of a metrical rule
   In general, the GMSR still plays a role in ME phonology.
b. Introduction of a metrical rule (NFMSR)
   The NFMSR is borrowed into ME with a great number of NF words and it assigns main stress on the final syllable of NF non-prefixed words. Therefore, NF non-prefixed words are subject to two main stress rules (GMSR and NFMSR) while the other ME words are only subject to the GMSR. The doubly-stressed words either lose one of the two stresses (usually the second stress) by the *Destressing Rule* in the case of the disyllabic words. In NF polysyllabic words, the second of two main stresses becomes secondary stress on the foot level by the trochaic parameter of the foot.
c. Variation in the classification of prefixes in the lexicon
   Stress variations on the NF prefixed words can be considered a by-product of the inconsistent assignment of their prefixes into the lexical levels in the ME lexicon. The inconsistency may be found in words with prefixes, whose identity is blurred by the loss of their meaning and their lexical derivation.
d. Loss of a metrical rule (OESSR)
   The OESSR which assigns quantity-sensitive secondary stress on non-final heavy syllables in OE ceases to be active in ME phonology. On the other hand, quantity-insensitive secondary stress is still placed on the second elements of compounds.

In conclusion, my analysis of ME stress change has several consequences. First, stress variations in native and particularly NF prefixed words are accounted for in a motivated way without using morphological stipulations in the lexicon. Their exceptional stress patterns are produced by inconsistent occurrence of their prefixes at an appropriate lexical level,

which might be caused by ME speakers' inability to identify lexical categories of NF prefixes. Second, stress doublets of NF disyllabic loan words are simply accounted for by assuming variations in the application of the *Destressing Rule*. Since the stress doublets are produced by the *Destressing Rule*, there is no need for problematic lexical groupings of NF loan words with regard to their stress patterns. Third, the stress system works well in explaining diachronic changes in ME secondary stress assignments: the loss of native quantity-sensitive secondary stress and the emergence of new quantity-insensitive secondary stress on the NF trisyllabic words. With regard to the former, since two kinds of secondary stresses are derived in different ways, their different fates in ME (the loss of quantity-sensitive secondary stress and the maintenance of quantity-insensitive secondary stress) are well captured. In addition, the stress system accounts for why secondary stress appeared only in NF polysyllabic words without having an additional stress rule. I argue that all these advantages are gained only within the metrical system where main and secondary stress are assigned at the different domains and stress rules apply in the lexicon where phonological and morphological operations interact with each other.

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