On Secondary Stress in Old English*

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0. Introduction

Various attempts have been made to account for stress facts in Old English (henceforth, OE) from both traditional and generative perspectives. An exhaustive description of stress in Beowulf is made mainly on metrical grounds by scholars such as Sievers (1885). On the basis of the description, theoretical accounts have been made by generative phonologists like Halle and Keyser (1971), Seki (1980, 1981), Watanabe (1980), and Suphi (1988), among others. It should be noticed, however, that there is still a controversy about the inter- pretation of OE secondary stress and that a principled account has not been given to OE secondary stress from a generative phonological view- point. It is, therefore, necessary to describe facts about OE second- ary stress within a rigid theory of meter and to provide a principled theoretical characterization of the occurrence and nonoccurrence of secondary stress on the basis of a substantial amount of evidence.

This paper attempts to make a description of OE secondary stress based on an investigation into the data in The Anglo-Saxon Poetic Records (henceforth, ASPR) within the framework of the metrics pro- posed by Sievers (1885, 1893), and to provide a theoretical account for the occurrence and nonoccurrence of OE secondary stress within the framework of Halle and Vergnaud (1987) (henceforth, H&V).

This paper is organized as follows. Section 1 is devoted to a description of facts about OE secondary stress with special reference to suffixes, called the ELS-type suffixes, and words with a bisyllabic stem. Section 2 shows that the occurrence and nonoccurrence of sec- ondary stress are accounted for naturally within the framework of H&V. Specifically, the facts about OE secondary stress are captured by as- suming that on the Stress Plane bianry left-headed constitiuents are constructed from right to left, and that the rule of Stress Deletion is formulated in such a way that it is sensitive to information on a second metrical plane, called the Stress Deletion Plane, where bianry right-headed constituents are constructed from left to right. In

section 3, it is argued that my proposed analysis has some implications for OE phonology and phonological theory in general.

1. The Basic Data and the Problem

I begin by describing facts about OE secondary stress and posing problems to be resolved, confining myself to a consideration of the accentuation of a class of suffixed words and that of words with a bisyllabic stem.

As a basis for a description, I summarize in (1) the two basic facts concerning OE stress, which are commonly assumed in both traditional and generative treatments of OE stress.

(1) a. Primary stress falls on the initial syllable of a word.
    b. Stress never falls on inflectional endings.

In addition, I assume with Sievers (1885, 1893) that half lines of OE alliterative verse mostly contain four syllables and that the rhythmic structures of half lines are reduced to five patterns, as indicated in (2).[1]

(2) a. Type A: SW | SW
    b. Type B: WS | WS
    c. Type C: WS | SW
    d. Type D: S | SWW
    e. Type E: SWW | S
    N.B. i) | represents a foot boundary.
        ii) A syllable corresponding to an S position must always
            bear stress.
       iii) A syllable corresponding to a W position in Types A,
            B, and C may or may not bear stress.
        iv) A syllable corresponding to one of the two W's in the
            anapestic foot (SWW) of Types D and E must bear secondary stress.

1.1. ELS-type Suffixes

Let us first consider the accentuation of the suffixes listed in (3) and (4), which I call here the ELS-type suffixes.

(3) -els, -en, -end, -ere, -erne, -ig, -ing, -isc, -ness, -oþ

(4) -i-, -od-, -ende, -enne, -est, -ost

My investigation into the data in <u>ASPR</u> on the two above-mentioned assumptions reveals that a descriptive generalization can be made, as in (5), with respect to the accentuation of the ELS-type suffixes.[2]

(5) The ELS-type suffixes bear secondary stress only when they
     are followed by an inflectional ending and preceded by one
     heavy syllable or two light syllables.

Genaralization (5) is derived from the examples in (6), where the half lines cited are interpreted as either Type C, Type D, or Type E. As mentioned above, primary stress falls on the initial syllable of a word and stress does not fall on inflectional endings. It follows, then, that secondary stress falls on the ELS-type suffixes to meet the metrical requirement that there should be two ictuses (Hebung in Sievers's term) in lines interpreted as Type C and that there should be one secondary stress in lines interpreted as Types D and E.

(6) a. on ðam fæstelse   (Type C)   (Jud 127a)
    b. fæstena worn   (Type E)   (Exo 56b)
    c. bearn hælendes   (Type D)   (Xst 152b)
    d. bec leornere   (Type D)   (Mx1 30b)
    e. easterne wind   (Type E)   (Gen 315b)
    f. haligne dream   (Type E)   (Xst 327b)
    g. entiscne helm   (Type E)   (Bwf 2979b)
    h. æþelinga rim   (Type E)   (Gen 1161b)
    i. fram blindnesse   (Type C)   (Ele 299a)
    j. of langoþe   (Type C)   (WFl 53a)
    k. wearh hangian   (Type D)   (Mx2 55b)
    l. Glof hangode   (Type D)   (Bwf 2085a)
    m. næw singende   (Type D)   (Sfr 22a)
    n. to ferenne   (Type C)   (P 118.59.2a)
    o. þa gleawestan   (Type C)   (Ele 536b)

Generalization (5) implies that secondary stress does not fall on the ELS-type suffixes when they are not followed by an inflectional

ending. This is borne out by the examples in (7), where all the half lines are interpreted as Type A. In these cases, there is little direct metrical evidence to determine whether or not secondary stress falls on the ELS-type suffixes. In fact, words to which only the ELS-type suffixes are attached do not appear in half lines of Type D or Type E. Thus, I assume, following Sievers (1893: 126), that the ELS-type suffixes are interpreted as unstressed when they are preceded by one heavy syllable or two light syllables and are not followed by an inflectional ending.

(7) a. brídels frǽtwan   (Type A)   (Ele 1198b)
    b. léoda fǽsten   (Type A)   (Bwf 2333b)
    c. dríhten hǽlend   (Type A)   (Xst 218a)
    d. hálig dríhten   (Type A)   (Gen 642b)
    e. ǽþeling ánmod   (Type A)   (Gen 1662a)
    f. dróhtaþ sécan   (Type A)   (Gen 1818b)
    g. mǽgenes stréngest   (Type A)   (Bwf 196a)

Generalization (5) also implies that secondary stress does not fall on the ELS-type suffixes when they are not preceded by a heavy syllable or two light syllables. This is borne out by the examples in (8), where metrical resolution (Auflösung in Sievers's term) of a stem syllable takes place. The sequence of a light syllable plus another syllable is metrically equivalent to one heavy syllable, so that the ELS-type suffixes are interpreted as unstressed.

(8) a. cýninga áldor   (Type A)   (And 555b)
    b. fǽmnan lýfjan   (Type A)   (Jln 27a)
    c. Líssum lýfodon   (Type A)   (And 868a)

1.2. Words with a Bisyllabic Stem

Interestingly, a generalization similar to (5) can be made with respect to the accentuation of words with a bisyllabic stem ending in a consonant. The generalization is expressed as in (9), which clearly shows that the stress pattern of words with a bisyllabic stem is identical with that of words to which the ELS-type suffixes are attached.

(9) The second syllable of a bisyllabic stem bears secondary
stress if it is followed by an inflectional ending and
if the first syllable of a stem is heavy.

Generalization (9) stems from the metrical analysis of half lines
such as those listed in (10). In these examples, secondary stress
falls on the second syllable of words like hīrede, hlāfordes,
gēomuru, and ōþerne, all of which are inflected forms of words with a
bisyllabic stem. That is because, as already mentioned in section
1.1, there must be two ictuses in lines of Type C and because there
must be at least one secondary stress in the anapestic foot (SWW) of
lines of Types D and E.

(10) a. for þām hīrede   (Type C)   (Xst 421a)
     b. hlāfordes gífu   (Type E)   (Ele 265 b)
     c. þæt wæs gēomuru   (Type C)   (Bwf 1075b)
     d. ōþerne bæd   (Type E)   (Ele 1662b)

Generalization (9) implies that secondary stress does not fall on
the second syllable of a bisyllabic stem when it is not followed by an
inflectional ending. This is borne out by the facts about the accen-
tuation of words such as hēafod, hlāford, and ōþer. As shown in
(11), these words mainly appear in half lines construed as Type A.
Although the first syllable of these words is heavy, there is little
direct evidence to argue for the existence of secondary stress on the
second syllable of these words. Thus, I assume with Sievers (1893:
126) that the second syllable of a bisyllabic stem is unstressed when
it is not followed by an inflectional ending.

(11) a. hēafod gesāwon   (Type A)   (Xst 381b)
     b. hlāford habban   (Type A)   (Gen 2315a)
     c. ōþer wúndor   (Type A)   (Exo 108b)

Generaliztion (9) also implies that secondary stress does not
fall on the second syllable of a bisyllabic stem when its first syl-
lable is light. This is borne out by the facts about the accentuation
of words like duguð, heofon, and werod and their inflected forms.
As indicated in (12), in these words and their inflected forms, met-
rical resolution of a stem takes place, so that the syllable weight

of the first light syllable plus the second syllable is metrically interpreted as having an equivalent status to one heavy syllable. The second syllable of the stem of these examples must be interpreted as unstressed.

(12) a. dúguð sámnöde   (Type D)   (And 125b)

     b. dúguða brūcan   (Type A)   (Gen 2665a)

     c. héofon and eorðan   (Type A)   (Gen 113b)

     d. wáldend héofona   (Type A)   (Gen 2212b)

     e. wérod sámnöde   (Type D)   (Ele 60b)

     f. wérodum swélgað   (Type A)   (Gen 1301b)

1.3. Synthesis

In the preceding sections, the description was made concerning the occurrence and nonoccurrence of OE secondary stress with special reference to the ELS-type suffixes and words with a bisyllabic stem ending in a consonant. It was made clear that the stress pattern of words with a bisyllabic stem is identical with the pattern of words to which the ELS-type suffixes are attached. From this fact follows the conclusion that the occurrence and nonoccurrence of secondary stress is in principle phonologically conditioned. It is not morphonologically conditioned, as Campbell (1959) and other traditional studies implicitly imply.[3] It is, therefore, necessary to observe the data adduced in sections 1.1 and 1.2 from a purely phonological standpoint.

Seen in a phonological perspective, the following two facts are brought to light: i) The number of syllables in the words adduced above ranges from one to four and ii) syllable weight does not enter into stress assignment. Given these two facts, descriptive generalizations can be made, as in (13), from a phonological viewpoint with respect to the accentuation of OE words containing less than five syllables.

(13) a. Primary stress falls on the initial syllable of a word.

     b. Secondary stress falls on the penultimate syllable of a
         word when it is preceded by one heavy syllable or two
         light syllables.

The two generalizations in (13) are empirically equivalent to, but much simpler than, those made in traditional accounts of OE stress. In fact, the generalizations in (13) provide us with a much clearer picture of the occurrence and nonoccurrence of secondary stress. The traditional generalizations, mainly based on morphological criteria, should be rejected on the grounds that they obscure the facts and do not provide a clear picture.

In light of the generalizations in (13), three questions now arise as in (14).

(14) a. How can the occurrence of secondary stress be captured?

b. Why does secondary stress not fall on the penultimate syllable of a word if it is preceded by one light syllable?

c. Why are two light syllables equivalent to one heavy syllable with respect to stress assignment?

To these three questions, few of the previous studies on OE stress give a satisfactory answer. Thus, it is our task to provide a satisfactory answer to these three questions. This task I will engage in in the next section, paying particular attention to H&V's theory of stress.

2. A New Analysis of OE Secondary Stress
2.1. Backgrounds

As a basis for a theoretical analysis, I adopt here the framework of H&V, which is now conceived of as the most articulated theory of stress and contains important proposals for the nature of stress. cf. Okazaki (to appear).

Among the proposals, the following two are relevant to discussion in the present paper. First, stress phenomena, or more generally phonological phenomena, are characterized as local. This thesis is not explicitly mentioned in the previous studies on stress, but it is very important because locality plays an important role in current linguistic theory. Second, stress is represented on a plane, called the Stress Plane, in terms of metrical grids, which consist of columns and layers of lines, and metrical constitiuent structures, each of

which contains exactly one rhythmic position that is distinguished
from all the others as being prominent. Thus, H&V take an intermedi-
ate position between the standard metrical theory (e.g. Hayes1980),
where metrical trees and feet play important roles, and the treeless
grid theory (e.g. Prince 1983), where only metrical grids are impor-
tant.

2.2. Stress Rules for OE

H&V do not present an analysis of OE stress system, and, to the
best of my knowledge, no one has ever proposed stress rules for OE
within H&V's framework. However, H&V's framework can capture not only
the basic facts about OE stress but also those about secondary stress
made clear in section 1 without modifying their fundamental hypothses.
I propose here stress rules for OE as in (15), taking the generaliza-
tion in (13a-b) into consideration.[4]

> (15) a. Line 0 parameter settings are [+HT, +BND, left, right to
>   left].
>
>   b. Construct constituent boundaries on line 0.
>
>   c. Locate the heads of line 0 constituents on line 1.
>
>   d. Line 1 parameter settings are [+HT, -BND, left].
>
>   e. Construct constituent boundaries on line 1.
>
>   f. Locate the head of the line 1 consituent on line 2.

These rules correctly predict the occurrence of secondary stress as
well as that of primary stress of the words in (6) and (10). Thus,
observe in (16) the derivations of metrical structures for words like
hálìgne ((6g)), ǽþelìnga ((6i)), and hláfòrdes ((10c)).

> (16) a.   *   .   . line 2
>   (15a-c) * * . (15d-f) (* *) . line 1
>   * * *   →   (*)(* *)   →   (*)(* *) line 0
>   hāligne   hā ligne   hā ligne
>
>   b.   *   .   .   . line 2
>   (15a-c) * . * . (15d-f)(* . *) . line 1
>   * * * *   →   (* *)(* *)   →   (* *)(* *) line 0
>   æþe linga   æþe linga   æþe linga

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   c.                                                    *  .  .   line 2
              (15a-c)    *  *  .   (15d-f)  (*  *)  .   line 1
      *  *  *      →      (*)(*  *)    →      (*)(*  *)  line 0
      hlāfordes          hlā fordes          hlā fordes
```

The rules in (15) can also account for the nonoccurrence of sec-
ondary stress in the words listed in (7), (11), and (12a, c, d).
These words are all bisyllabic, so that desired metrical structures
are straightforwardly derived by the rules in (15). Consider in (17)
the derivations of metrical structures of brītels, hláford, and
wérod.

```
   (17) a.                                          *  .   line 2
                 (15a-c)    *  .   (15d-f)  (*).   line 1
         *  *       →      (*  *  )    →      (*  *  )  line 0
         brītels            brītels            brītels
        b.                                          *  .   line 2
                 (15a-c)    *  .   (15d-f)  (*).   line 1
         *  *       →      (*  *)    →      (*  *)  line 0
         hlāford            hlāford            hlāford
        c.                                          *  .   line 2
                 (15a-c)    *  .   (15d-f) (*).   line 1
         *  *       →      (*  *)    →      (*  *)  line 0
         werod              werod              werod
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The derivations in (16) and (17) show that the rules in (15) can
adequately capture the occurrence of secondary stress on the penulti-
mate syllable of trisyllabic and quadrisyllabic words and the non-
occurrence of secondary stress on the ultimate syllable of a word.
It can be said, therefore, that the problem in (14a) is solved by con-
structing binary left-headed constituents from right to left.

2.3. Stress Deletion and the Dual Metrical Structure
     Although the rules in (15) account for stress patterns of a wide
range of data, these rules cannot capture the fact implied in general-
ization (13b). Specifically, the fact that secondary stress does not
fall on the penultimate syllable if it is preceded by one light syl-

lable. In fact, the rules incorrectly predict that secondary stress falls on the penultimate syllable in the examples of (8) and (12b, d, f). Thus, observe in (18) the derivations of the metrical structure of words such as <u>cyninga</u>, <u>duguða</u>, and <u>werodum</u>.

(18) a.

```
                                              *  .  .   line 2
                  (15a-c)  *  *  .   (15d-f) (*  *) .   line 1
        *  *  *    →    (*)(*  *)      →     (*)(*  *)   line 0
        cyninga         cy ninga            cy ninga
```

b.

```
                                              *  .  .  line 2
                  (15a-c)  *  *  .  (15d-f)  (*  *).   line 1
        *  *  *    →    (*)(*  *)      →     (*)(*  *)  line 0
        duguda          du guða             du guða
```

c.

```
                                              *  .  .   line 2
                  (15a-c)  *  *  .  (15d-f)  (*  *).    line 1
        *  *  *    →    (*)(*  *)      →     (*)(*  *)   line 0
        werodum         we rodum            we rodum
```

None of the metrical structures represents the actual stress pattern. This means that the rules in (15) cannot solve the problems in (14b-c). Notice, however, these rules have a wide empirical coverage. It is, therefore, not unreasonable to assume that the two problems should be solved without modifying the rules. In particular, a rule must be formulated in local fashion which deletes a line 1 asterisk on the penultimate syllable of a word if it is preceded by one light syllable.

It should be noticed here that the rule must directly reflect the difference of one light syllable from one heavy syllable and two light syllables. In other words, the fact that one heavy syllable and two light syllables constitute a class with respect to destressing must explicitly be represented. To accomplish this aim, I propose here that in OE there is a second metrical plane, called the Stress Deletion Plane, and that a rule for asterisk deletion is formulated on the basis of information on the Stress Deletion Plane.[5]

There are at least two motivations for this proposal. First, information about the kind of an antepenultimate syllable cannot be represented on the Stress Plane. Take the metrical structure of the

words <u>hangode</u>, whose antepenultimate syllable is heavy, and <u>lufode</u>, whose antepenultimate syllable is light. For these two words exactly the same metrical structure is produced on the Stress Plane, as indicated in (19).

(19) a. * . . line 2   b.   * . . line 2
         (* *). line 1   (* *). line 1
         (*)(* *) line 0   (*)(* *) line 0
         hangode   lu fode

Second, segmentalism cannot explicitly capture the fact that one heavy syllable and two light syllables constitute a natural class for destressing, although it might be possible to formulate a rule for asterisk deletion in segmental terms. In fact, a segmental version of the rule would not capture the phenomenon in local fashion. Variables in the sense of Chmosky and Halle (1968) would be utilized, which is of great disadvantage in a current stream of phonological theory. If a rule for asterisk deletion is formulated in terms of the rime structure, it is formulated in local fashion as a rule which deletes a line 1 asterisk of a nucleus which immediately follows a nonbranching rime in the rime structure. Notice, however, that this approach cannot capture, either, the fact that one heavy syllable and two light syllable constitute a class for asterisk deletion.

The introduction of the Stress Deletion Plane, on the other hand, makes it possible to capture the fact that one heavy syllable and two light syllables behave in the same manner in stress deletion and to formulate a rule for asterisk deletion in local fashion. I assume here that metrical structures on the Stress Deletion Plane are constructed by rules as in (20).

(20) a. Assign a line 1 asterisk to a heavy syllable.
     b. Line 0 parameter settings are [+HT, +BND, right, left to right].
     c. Construct constituent boundaries on line 0.
     d. Locate the heads of the constituent of line 0 on line 1.

Thus, <u>hangode</u>, <u>æþelinga</u>, and <u>lufode</u> have a dual metrical structure, as in (21).

(21) a. * . .   b. * . . .   c.   * . .

   (* *).   (* . *) .   (* *) .

   (*)(* *)   (* *)(* *)   (*)(* *)

   hangode   æ þe linga   lu fo de

   (*)(* *)   (* *)(*)(*)   (* *)(*)

    * . *   . * * *   . * *

Notice again that in (21c) stress deletion must take place, while in (21a-b) it must not take place. It is now clear that the line 1 asterisk on the penultimate syllable is deleted on the Stress Plane if its bearer (a syllable nucleus) is the head of a binary constituent on the Stress Deletion Plane. Thus, it is quite reasonable to formulate a rule, called Stress Deletion, as in (22), by utilizing information on the Stress Deletion Plane.

(22) Stress Deletion

   * → . / (* __)   line 1

        * *   line 0   Stress Plane

        X X

       (* *)   line 0

        . *   line 1   Stress Deletion Plane

   N.B.: X represents a syllable nucleus.

Rule (22) can derive desired metrical structures for the data in (17), as shown in (23). Thus, problem (14b) is solved by postulating a second metrical plane, called the Stress Deletion Plane.

(23) a. * . .   * . . line 2

       (* *) .   (*) . . line 1

       (*)(* *) (22) (*) * * line 0

       cy ninga →   cy ninga   →   cýninga

       (* *)(*)   (* *)(*) line 0

        . * *   . * * line 1

```
b.   *   .   .            *   .   .    line 2
     (*  *) .             (*) .   .    line 1
     (*)(*  *) (22)       (*) *   *    line 0
     du gu ða  →          du gu ða     →        dúguða
     (*  *)(*)            (*  *)(*) line 0
     .  *  *              .  *  *    line 1
c.   *   .   .            *   .   .    line 2
     (*  *) .             (*) .   .    line 1
     (*)(*  *) (22)       (*) *   *    line 0
     we ro dum →          we ro dum    →        wérodum
     (*  *)(*)            (*  *)(*) line 0
     .  *  *              .  *  *    line 1
```

Rule (22) also gives an answer to problem (14c). Observe again
the metrical structures for hángòde and æþelìnga in (21). In
these two cases the penultimate syllable is not the head of a binary
constituent on the Stress Deletion Plane. Thus, to either of these
cases the rule cannot apply. In fact, it is not unreasonable to as-
sume that on the Stress Deletion Plane, the line 1 asterisk alinged
to the syllable -lin- of æþelìnga is deleted in the environment
__ in order to avoid clash. Thus, for æþelìnga, a metrical
structure as in (24) is ultimately produced.

```
(24)   *   .   .   .    line 2
       (*  .  *) .    line 1
       (*  *)(*  *) line 0   Stress Plane
       æ þe linga
       (*  *) *  (*) line 0
       .  *  .  *    line 1   Stress Deletion Plane
```

It can also be said, therefore, that on the Stress Deletion Plane the
penultimate syllable cannot be a head of a consitutuent if it is pre-
ceded by one heavy syllable or two light syllables. That is why two
light syllables and one heavy syllable constitute a class with respect
to stress deletion.

3. Theoretical Implications

Having provided a theoretical characterization of the occurrence and nonoccurrence of OE secondary stress, I turn to a consideration of theoretical implications of the proposals in this paper. In the first place, the present analysis of OE secondary stress explicitly shows the validity of H&V's theory of stress. As is already clear, the facts about OE secondary stress can be accounted for without modifying the fundamental hypotheses of H&V's theory. The stress system of OE seems to be evidence to show the validity of H&V's theory of stress.

The proposed analysis also has an implication for phonological theory in general. The analysis of OE stress deletion, presented in section 2.3, gives a strong support to Rappaport's (1984) assumption that more than one metrical structure may be associated with a given central line of phonemes. Recall that the essential nature of stress deletion cannot be captured without postulating two metrical planes, one for stress assignment and the other for stress deletion. In this respect, stress deletion in OE is very similar in nature to other phonological processes like vowel reduction in Tiberian Hebrew (cf. Rappaport (1984) and H&V), vowel deletion in Yawelmani (cf. Archangeli (1984)), stress shift in Klamath (cf. H&V), and vowel lengthening in the Nakijin dialect of Japanese (cf. Haraguchi (1988)). In order to capture these apparently complicated phenomena, a second metrical plane must be postulated in addition to the Stress Plane.

I hasten to add that Keyser and O'Neil (1985) are the first to propose that two metrical structures are necessary for OE. To account for the facts about OE High Vowel Deletion, they assume a second metrical structure, which is constructed in accordance with an algorithm as in (25).

(25) Foot Construction
Gather rimes from left to right into binary, quantity sensitive, right headed trees.

(Keyser and O'Neil (1985: 6))

Interestingly enough, this alogorithm is a functional equivanlent to the rules in (20). In other words, the alogorithm is properly incorporated into H&V's framework as the rules in (20). This implies that

metrical structures on the Stress Deletion Plane is useful not only for an account of stress deletion but also for an account of High Vowel Deletion.⁶ The facts about stress deletion in OE give a strong support to Keyser and O'Neil's (1985) original proposal.

4. Conclusion

In this paper, I have been concerned with a theoretical characterization of the occurrence and nonoccurrence of OE secondary stress and made two proposals. First, the occurrence of secondary stress in OE is completely predicted by assuming that line 0 constituents are binary, left-headed, and constructed from right to left. Second, the nonoccurrence of secondary stress in trisyllabic words whose initial syllable is light, which has been a mystery in OE phonology, is accounted for locally by assuming that there is a second metrical plane, called the Stress Deletion Plane and that the rule of Stress Deletion is fomulated on the basis of information on the plane.

NOTES

* This paper is seen as a by-product of my review of Halle and Vergnaud's An essay on stress (Okazaki to appear), into which part of this paper should have been incorporated to demonstrate the validity of H&V's theory of stress. I am very grateful to the following people for their invaluable comments on a draft of this paper which resulted in a lot of substantial changes: Shosuke Haraguchi, Yasuaki Fujiwara, and Takeru Honma. I would like to express special thanks to Shin-ichi Tanaka. He enthusiastically discussed the topic in this paper with me and gave me a lot of invaluable comments which helped me articulate the proposals in this paper.

¹ Keyser (1969) and Halle and Keyser (1971) take issue with Sievers's (1885, 1893) framework. In particular, Keyser (1969: 347f.), following Bliss (1958), casts doubt upon the metrical significance of secondary stress in half lines of Types D and E and denies the existence of secondary stress on the penultimate syllable of a trisyllabic word which appears in these half lines.

Keyser's argument, however, seems to be rather weak in that he

assumes that secondary stress falls on the second element of a compound. Notice that in his framework secondary stress in a compound is also irrelevant to OE meter. Furthermore, in his framework, there is no metrical evidence to argue for the existence of secondary stress on the second element of a compound. It is, therefore, not unreasonable to argue that there is no strong evidence to deny the existence of secondary stress on the penultimate syllable of a trisyllabic word.

On the basis of the above arguments, I assume here that secondary stress, though metrically irrelevant, can fall on the penutimate syllable of a trisyllabic and quadrisyllablic word and that Sievers's framework, though it should be modified in some respects, works well as a descriptive device.

² Campbell (1959: 34) makes an equivalent generalization to that in (5). However, he does not adduce enough examples to justify his own generalizaion.

³ I do not mean that all the occurrences of secondary stress are phonologically determined. The occurrence of secondary stress on the suffixes listed in (i) is in principle not phonologically but morphologically conditioned.

    (i) -dōm, -cund, -fæst, -feald, -full, -had, -lāc, -lēas, -līc
       -sum, -weard, -wist

Secondary stress falls on these suffixes if they are followed by an inflectional ending or if they are preceded by a bisyllabic stem. Secondary stress does not fall on these suffixes if they are not followed by an inflectional ending and preceded by a monosyllabic stem. These facts are explicitly shown in (ii). cf. Sievers (1893: 125-7) and Campbell (1959: 34).

    (ii) a. wīsdōme   eorðcùnde   ærfæste
       b. ínnanwèard wītelāc   æfenlāc
       c. wīsdōm   sælæc   árlēas

Notice here that these facts cannot properly be treated by the rules proposed in section 2. These facts, however, are not real counterexamples to the analysis advocated in this paper. It is important to note here that the behavior of the suffixes in (i) is very similar

to that of -ary and -ory in Present-Day English, which, as indicated in (iii), bear secondary stress when preceded by an unstressed syllable and do not bear secondary stress when immediately preceded by a syllable bearing main stress of a word.

> (iii) a. légendàry   inhìbitòry
>   b. eleméntary   perfúnctory

H&V claim that suffixes like -ary and -ory constitute a domain for stress rules. They are sensitive to destressing only when a syllable bearing main stress immediately precedes them. It is, therefore, quite reasonable to assume that in OE the suffixes in (i) constitute the domain for stress rules and are subject to stress deletion when it is preceded by a syllable bearing main stress and is not followed by an inflectional ending.

⁴ A consideration of extrametricality and cyclicity in stress assignment is excluded from discussion in this paper.

⁵ Shosuke Haraguchi, Takeru Honma, and Shin-ichi Tanaka suggested to me that it may also be possible to treat the facts about OE stress deletion by introducing the level of mora. In an analysis assuming mora, at most two segments dominated by the Rime node are counted as a mora. In addition, the word-final rime is marked extrametrical, and the parameter settings for lines 0 and 1 are [+HT, +BND, left, left to right] and [+HT, -BND, left], respectively. It is striking that in this analysis desired metrical structures are produced for all the cases discussed in this paper. More importantly, in this analysis neither the Stress Deletion Plane nor the rule of Stress Deletion is necessary to deal with the facts about stress deletion. Thus, observe in (i) the metrical structures for hālīge, hālig, and wérodum.

> (i) a. *. .   .   b. *. . .   c. *.   .
>   (*. *) .   (*). .   (*).   .
>   (**)(*) .   (* *) .   (* *)   .
>   haa li g<e>   ha a l<ig>   wero d <um>

This analysis seems at first glance to be superior to my proposed analysis in that it is not necessary to postulate the dual metrical structure. My impression is, however, that this analysis contains at

least one problem.

The problem is that an elegant metrical structure must be trans-
formed into a less elegant one. Consider the metrical structure of
hálignèsse, a quadrisyllabic word. In an analysis assuming mora, a
metrical structure is generated, as in (iii), for hálignèsse.

(iii)   * . . . . .   .
         (*.   *.   *).   .
         (**)(**)(* *)   .
         haa lig ne s s<e>

The metrical structure in (iii) is quite elegant, and it obeys
Selkirk's (1984: 52) Principle of Rhythmic Alternation, which is re-
peated in (iv).

(iv) The Principle of Rhythmic Alternation

a. Every strong position on a metrical level n should be fol-
    lowed by at least one weak position on that level;

b. Any weak position on a metrical level n may be preceded by
    at most one weak position on that level.

The structure, however, does not represent an actual stress pattern.
The line 1 asterisk aligned to the third mora -i- must be deleted by
a rule formulated as in (v).

(v) * → . / * . ___ . *   line 1

It should be noticed that asterisk deletion expressed in (v) is not a
local process and that a rule like (v) is not attested in other lan-
guages. In fact, as shown in (vi), the deletion of the asterisk pro-
duces an less elegant metrical structure, which results in a violation
of the principle in (ivb). Thus, I do not adopt here an analysis as-
suming the level of mora. Instead, I adopt an analysis assuming the
dual metrical structure.

(vi)   *. .. . .   .
        (*. .. *).   .
        (**)**(* *) .
        haaligne ss<e>

For further details of the moraic theory of stress, see Tanaka

Tanaka (1989a, b).

⁴ As far as I know, OE is the only language where a second metrical plane is relevant to both a segmental phenomenon and stress deletion. In other languages, a second metrical plane is postulated mainly for an account of segmental phenomena. Therefore, to strongly argue for the proposal in this paper, a language must be found in which a second metrical plane is necessary for an account of both a segmental process and stress deletion or destressing. This task I will leave for future research.

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