Blending in English and English Loanwords: An Optimality Theoretic Approach*

Hong-won Seo
(Chonbuk National University)

Seo, Hong-won. 2011. Blending in English and English Loanwords: An Optimality Theoretic Approach. *The Linguistic Association of Korea Journal. 19*(2). 35-55. The goal of this paper is to provide some aspects of blends within the framework of Correspondence Theory. Blends can largely be categorized into two groups: those with and without overlapping segments. In the cases of overlapping blends, the identical segment has a role as the switch point, while in the latter the switch points are placed on prosodic or morphological boundaries such as foot, syllable, and rhyme. Although the alignment constraints control these switch points in English blends, Align(BW, BW(Σ)) is not considered in an analysis of English loanword blends, as the Korean phonology system is exempted from word stress. In particular, in the cases of non-overlapping blends, Align(BW, σ) plays a crucial role in demarcating splinters of the two source words. In addition, the minimal word requirement for forming a new blended form causes the number of syllables to be at least two. This paper sheds light on setting some foundation for an analysis and comparing the disparity of the processes of forming blends in English and English loanwords.

Key Words: blending, switch point, English loanwords, Output-to-Output Correspondence, optimality

1. Introduction

Blends, also called portmanteau words, refer to the products of a

* I am very grateful to anonymous reviewers for providing useful comments on this paper. All remaining errors are mine.

word-formation process by which two or more existing words are combined into one, accompanied by shortening or clipping of the base words with or without overlapping segment. When creating a new word by blending, the internal parts of the base words are often subtracted: one segmental string from the right part of the first word and another from the left part of the second word. For example, the English blend *motel* has been formed by combining *motor* and *hotel* and subtracting *tor* and *ho*. That is, it appears as *mo<tor · ho>tel*, where the removed part is enclosed in angle brackets and the symbol · is used to indicate the boundary between base words. Although blending is as highly productive, predictable, and systematic as other types of word formation such as affixation and compounding, it has long been regarded as an arbitrary process and has been dealt with as a marginal part of morphology. In particular, Bauer (1983) states that in most cases, blends are created from parts of two other words with no apparent rules and the coiner is explicitly free to take as much or as little from either base as is felt to be necessary or desirable.

Due to this tendency, only a few linguists (Kubozono, 1990; Bat-El, 1996; Hong, 2005; Jin, 2005; Seo, 2006, and others) have conducted studies on blending and argued that blends are produced with apparent principles and are rule-governed under a grammar which has grammatical structures and constraints. In addition, even in the literatures describing and analyzing blending, the main interest has largely been given only to original English words. That is, few attempts have been made to explain the fact that English loanwords derived from blending are linguistically governed.

The main purpose of this paper is to look at some morphological and phonological aspects of blending and to compare the asymmetric pattern between English blends and English loanword blends in Korean under the framework of Correspondence Theory (McCarthy & Prince, (hereafter M&P) 1995), which is set within Optimality Theory (Prince & Smolensky, 1993, 2004 (henceforth OT)). In this paper, we will scrutinize the properties of blends, which can be explained as the results of the interaction of a set of phonologically defined constraints and correspondence constraints.

This paper is organized as follows. In the next section, we present the basic OT model for the analysis of blending, based on the Output-Output Correspondence proposed by Benua (1995). In section 3, we present some data

produced by blending and analyze them by the Optimality Theory. Finally, in section 4, we summarize and conclude this study.

2. The Basic Model for Blending

When we account for blends under the framework of OT, two features should be considered. First, the purpose of blending is to shorten or truncate either a base word or both base words. Second, the derived syllable or foot structures of the base, which are absent in input representations, must be preserved to produce the appropriate blends. Based on two features, we will make use of the basic model for blends illustrated in Figure 1, which is similar to that of truncation proposed by Benua (1995).

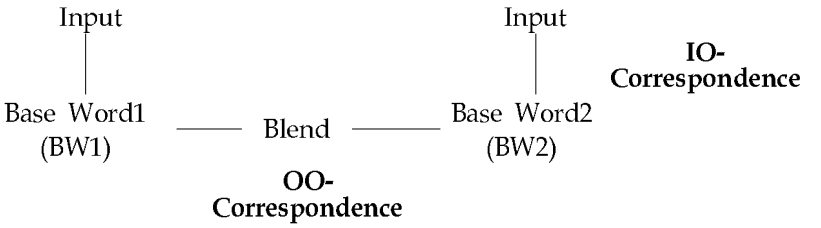

Figure 1. The basic model of English blending (Bat-El, 1996)

As we can see above, the blended form can function as a free standing form called the stem. This is related to two base words, which Benua refers to as the base. Thus, blending involves two correspondence relations: an input-to-base relation and an output-to-output relation between base words and blends. In this model, the segmental or syllabic correspondence between two base words and blends will be modulated by OO-correspondence constraints such as Max and Dep.

This model, when applied to blends, indicates the following correspondence relation preserving the base, the input, and the blended forms. Let us reconsider the correspondence relations illustrated by the example *motel*, which is formed from two base words, *motor* and *hotel*. As given in Figure 2, two base words show prosodic structures such as syllable and foot. These prosodic features of

the base words will play a crucial role in determining the size and order of the blended form.

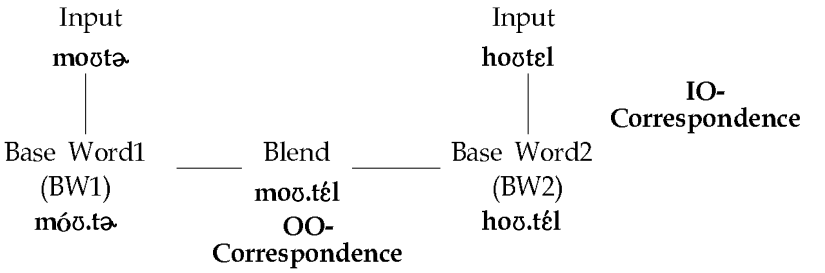

Figure 2. Correspondence relations in blends (Hong, 2005)

In the following section, we will introduce the data formed by blending and consider how blends will be analyzed and explained by OT. In addition, we will show some similar, but different aspects of blends between English and English loanwords and show why asymmetric patterns between them happen.

3. Data and Description for Blends

In this section, we will introduce the data created by blending, in which two independent words are combined into one and some internal portions of a new word are truncated. English blends can be categorized into two major types: overlapping and non-overlapping blends[1]. Overlapping blending indicates the cases in which two words are simply merged by overlapping shared phonological segments.

The following examples show how overlapping blends are formed. As seen below, these blends can be subcategorized into two groups: those in which some portions of each base word overlap, such as (1a-h) and those in which overlapping happens with inclusion of one base word of the two, like (1i, j).

1) According to the corpus study conducted by Jin (2005), of 2593 items, 1477 blends are produced with segment overlapping, while 719 blends are produced with no overlapping.

(1) Type 1. Overlapping blends in English (Hong, 2005; Jin, 2005)
a. disast<er + cat>astrophe → disastrophe
b. libra<ry + labo>ratory → libratory
c. smo<ke + f>og → smog
d. mot<or + h>otel → motel
e. drama + amateur → dramateur
f. anim<al> + mule → animule
g. steel + <mi>llionaire → steelionaire
h. cafet<eria + audi>torium → cafetorium
i. sin + cinema → sinema
j. sarcasm + chasm → sarchasm

The following examples are English words which are blended into a simple form without overlapping.

(2) Type 2. Non-overlapping blends in English (Hong, 2005; Jin, 2005)
a. b<ook + m>ovie → bovie (*mook)
b. fl<atter + bl>etcher → fletcher (*blatter)
c. cr<aw> + amble → cramble
d. f<at> + ugly → fugly
e. bl<ot + b>otch → blotch
f. spr<ay + tw>ig → sprig
g. b<old> +rash → brash
h. d<ove + h>awk → dawk
i. g<oo + m>uck → guck
j. appe<tite + thermo>stat → appestat

In case of non-overlapping blends, of which the clipping boundary is crisp, another significant factor in characterizing blends is the splinter, proposed as 'switch point' by Kubozono (1990). Let us consider the basic formation rule devised by Kubozono (1990, p. 4).

(3) Blending formation rule (Kubozono, 1990, p. 4)
AB + XY → AY (either B or X can be null)

Based on the concept of splinter and the blending formation rule, we can divide non-overlapping blends into one of three groups, as will be shown below. The switch point is marked by ⇑ and demarcates the boundary between the splinter and residue. According to splinters, blends can be categorized as follows:

(4) The types of blends (Hong, 2005)

a. splinter < residue + residue > splinter
⇑ ⇑

b. word < + residue > splinter
⇑

c. splinter < residue + > word
⇑

In addition to the switch points, one of the most important properties is how the order of the two base words should be determined. Under the concept of semantic headness, the base word, which can function as the head of the new word, should occur in the right-hand part. Adopting the notion of the right-hand head rule in the blending analysis, Kubozono (1990) states that the second base word should be the head of the blends. However, in a study on blending, a phonological consideration should be involved at any cost, as it can be a very important aspect in determining the syllabic length of the blend.

Considering a variety of words created by blending, we will present how the order of two base words should be effectively determined and which factors can play a crucial role in deciding the order. The basic tendencies are summarized as follows:

(5) The general ordering of two base words into a blended word

a. Blending should result in a new word (uniqueness, blocking[2]).
b. The base word with a word-initial onset precedes the one without a word-initial onset.
c. The base word with a word-initial complex onset is preferred as the first element in the blend .

2) Blocking is the name given to the phenomenon of the non-occurrence of a complex form because of the existence of another form. (Arnoff, 1981)

d. The base word with a lower-sonority onset is preferred as the first element in the blend.
e. The longer base word tends to be preferable in the position of the second element of blended forms.

With respect to uniqueness or blocking, we can easily predict the reason why only *bovie*, not *mook*, which is blocked due to the pre-existence of the word, can be a possible form derived from the combination of *book* and *movie*. When it comes to 5(b), when only one of the two bases begins with an onsetless syllable, the base word without the onset occupies the second part of the blends for the purpose of avoiding an onsetless syllable and maximizing onsets in the initial syllable. When *craw* and *amble* are blended into *cramble*, for example, *craw*, not *amble*, constitutes the first part, harmonizing with the onset maximization principle. In addition to the second principle, the base word with a more complex onset tends to appear at the first part in the onto increase tends iginal word's recoverability, which means that the content of the deletion rinciple. recoverable. Jin (2005) argues that the base word with a lower-sonority onset is preferred as the first component of the blend rather than the one with a higher-sonority onset. This mord This mfrom the potential tendency to consist of a well-formed syllable related with sonority. However, as Jin herself points out, this should inevitably face a few counter-examples such as *mog* (m<ove + j>og *jove). Finally, a longer base word is preferable to a shorter base word in the position of the second element of blends. The length of the blend is usually identical to that of the second base word.

Let us examine some blends in English loanwords adopted into Korean, most of which are from *New Words* (2003), published by the National Academy of the Korean Language, Chung (2007) and Seo (2008). When English words are loaned into Korean, they should conform to Korean syllable structure as well as to the phonotactic constraints from a phonological viewpoint. Even when new English loanwords are produced by blending, these points should be faithfully kept.

As can be seen in (6), many blends of English loanwords are non-overlapping cases, of which overall length of blends are controlled by the length of the second word. This means that the length is usually identical to that

of the second base word. Unlike English blends, most boundaries between two source words are usually likely to fall at a syllabic boundary. Thus, the switch points are all placed on the internal syllabic boundary.

(6) Type 1. Non-overlapping blends in English loanwords
a. ne<tizen + re>poter → nep^{h}ot^{h}ə
b. sel<ler + con>sumer → s′elsyumə
c. mu<sic + o>pera → mup^{h}era
d. cy<ber + tea>cher → s′aic^{h}ə
e. car + pa>parazzi → k^{h}ap^{h}arac^{h}i
f. home + a>ssurance → homsyurənsɨ
g. anno<uncer + pro>ducer → anadusə
h. sala<ried-man + stu>dent → s′ælədənt^{h}ɨ
i. bel<t + s>carf → pelk^{h}ap^{h}ɨ
j. ca<sual + s>ports → k^{h}ap^{h}oc^{h}ɨ
k. m<an + n>urse → məsɨ

In order to produce the new blends shown in (6a-h), the initial syllable of the second base is truncated, and then the remaining part is combined with the first syllable of the first base. If the first word is made up of a monosyllable, as given in (6e-f), the entire word remains without deleting any segments and becomes the first splinter of the blend. On the other hand, if the first syllable in BW2 consists of an onset cluster, the entire first syllable should be deleted as given in (6g-h), after which the initial two syllables of BW1 are combined with the second splinters in order to form new blends. The primary reason why two syllables of BW1, as the splinter, are combined with the second splinter is due to a repair strategy to preserve the overall length of BW2, because the complex onsets in original words are realized into two syllables in Korean loanwords.

The examples given in (6i-k) show the cases whose BW2s consist of a monosyllable. As a complex onset has more information than a simple onset, the first segment in the onset of BW2 is clipped for recoverability of the meaning. Actually, when BW2s are loaned into Korean, the complex onset is realized as each onset of separate syllables in order to conform to Korean phonological syllable structure. In (6k), the onset of the BW1 and the rhyme of the BW2 are blended.

(7) Type 2. Overlapping blends in English loanwords
a. ma<n + n>anny → mæni
b. anti + ne>tizen → ænt^{h}ijɨn
c. fast + re>staurant → p^{h}æsɨt^{h}ərənt^{h}ɨ
d. bugs + e>xpo → pəksɨp^{h}o
e. talen<t + annou>ncer → t^{h}alensə
f. sho<ck + ab>sorber → syoba

The above examples are all blends produced by overlapping. The blends tend to preserve the original structure of the base words as much as possible. On account of this strategy, the number of syllables in a blend corresponds with that of the syllables in the longer base. Contrary to this tendency, disparity exists in terms of the number of syllables between blends and longer bases. It is caused by the shared segments of the two bases. The shared parts can play an important role in placing the switch point.

(8) Exceptional cases[3)]
a. digi<tal + car>toon → dijitun
b. ana<logue + digi>tal → anat^{h}al
c. gag<man + anno>uncer → kægunsə
d. ma<gic + e>ngineer → mænjiniə
e. nex<t + n>oblian → neks'obɨliən

3) Some exceptional blends in English loanwords may lead to the reevaluation of some sequences of phonemes as an affix (Bauer, 1983, p. 236, Bat-El, 1996, p. 317). This word-formation process is called folk etymology in that an unanalysable form is mistakenly treated as analysable. (Seo, 2008, p. 180)
a. -ting
ceong.ki 'periodical' + mee>ting → cəŋt^{h}iŋ
phone + mee>ting → p^{h}ont^{h}iŋ
b. -parazzi
car + pa>parazzi → k^{h}ap^{h}arac^{h}i
sik<phum 'food' + pa>parazzi → sikp^{h}arac^{h}i
c. -tainment
docu<mentary + enter>tainment → tak^{h}ut^{h}einmənt^{h}ɨ
edu<cation + enter>tainment → edut^{h}einmənt^{h}ɨ

Of blends in English loanwords in Korean, some exceptional cases exist, shown in (8). Among the irregular patterns, the truncated forms such as *digi*, *gag*, and *ana* have frequently been used as isolated forms in everyday speech in Korea. Thus, when clipping the second syllable, the recoverability of the original words plays a role in restriction. When making new words by blending, the number of syllables of BW2 has a great deal of influence on deciding the overall length of blends.

So far we have introduced some data formed by blending both from English and English loanwords, categorizing them into non-overlapping and overlapping ones, and have described some aspects and properties associated with the ordering of the two base words. Considering the examples we have presented, we can predict that the phonological or phonetic differences between Korean and English play a crucial role in the process of blending. In the next section, we will provide an analysis for blends under the framework of Correspondence Theory (M&P, 1995).

4. Analysis

In this section, we will provide an analysis for blends of both English and English loanwords in Korean which is based on Correspondence Theory. The following constraints will be utilized in our analysis for English blending.

(9) The constraints for English blending
  a. Uniqueness: A blend must be a phonologically new word.
  b. Anchor constraints
    i. LeftAnchor(BW1, Blend): The left edge of the BW1 must correspond to the left edge of the blend.
    ii. RightAnchor(BW2, Blend): The right edge of the BW2 must correspond to the right edge of the blend.
  c. Align(BW, (sub-σ)) (Kager, 1999)
    i. Align (BW1, R, sub-σ, R): Align the right edge of a sub-syllable (onset or rhyme) with the right edge of BW1.
    ii. Align (BW2, L, sub-σ, L): Align the left edge of a sub-syllable with the left edge of BW2.

d. Align(BW, BW(σ))
   i. Align(BW1, R, σ, R): Align the right edge of a syllable with the right edge of BW1.
   ii. Align(BW2, L, σ, L): Align the left edge of a syllable with the left edge of BW2.
e. Align(BW, BW(Σ))
   i. Align(BW1, R, Σ, R): Align the right edge of a foot with the right edge of BW1.
   ii. Align(BW2, L, Σ, L): Align the left edge of a foot with the left edge of BW2.
f. Phono: Consonant clusters are constrained by phonotactics.
g. SyllCon: Rising sonority over a syllabic boundary is prohibited.

(10) The constraint ranking
Uniqueness, LeftAnchor(BW1,Blend), RightAnchor(BW2, Blend) ≫ Onset, SyllCon, Phono ≫ Align(BW, BW(Σ)), Align(BW, BW(σ)), Align(BW, BW(Sub-(σ))

First, we need the two anchoring constraints, which require both that the left edge of BW1 corresponds with the left edge of the blend and that the right edge of BW2 corresponds with the right edge of the blend. The two anchoring constraints are ranked high in the analysis since the base maintains the left- and right-edge elements in the blends.

Second, the alignment constraints related to switch points require that a foot, syllable, or sub-σ (onset or rhyme) of the first base word coincides with those of the second base word. That is, the alignment constraints require co-occurrence of edges of phonological categories as a demarcative property.

Finally, two more constraints, Phono and SyllCon are required. Phono requires that combinations of consonant clusters are constrained by English phonotactics. SyllCon is the constraint requiring that rising sonority over a syllabic boundary must be prohibited.

Let us consider how the two undominated anchoring constraints, LeftAnchor(BW1, Blend) and RightAnchor(BW2, Blend) will play a crucial role in selecting the optimal form. As can be seen in table 1, the two undominated

constraints rule out candidates (1a, c, d), and candidate (1b) is chosen as the optimal output.

Table 1. appe⟨tite + thermo⟩stat → appestat

appetite+thermostat	LeftAnchor(BW1, Blend)	RightAnchor(BW2, Blend)
a. appe.thermo		*!
☞ b. appe.stat		
c. tite.thermo	*!	*!
d. tite.stat	*!	

For the next two tables, we will not consider the two anchoring constraints, as these constraints must be satisfied at all costs in order to meet the definition of blending. Tables 2 shows that the ordering of base words is salient in that with respect to blocking, *bovie*, not *mook*, which has already existed in English from the combination of *book* and *movie*, is a possible form. In table 2, candidate (2e) is ruled out by the undominated constraint, Uniqueness. Candidates (2c) and (2d) are not optimal forms since they violate Phono and SyllCon, respectively. Of the remaining candidates, candidate (2b) is not qualified as the optimal form because the right edge of the rhyme of the first base does not align with the left edge of that of the second base word.

Table 2. b⟨ook + mo⟩vie → bovie (*mook)

(./b/ook/.) + (./m/o/.v/ie/.)	Uniqueness	SyllCon	Phono	Align (BW, Σ)	Align (BW, σ)	Align (BW, sub-σ)
☞ a. bovie				*, *	*, √	√, √
b. boovie				*, *	*, √	*!, √
c. bmovie			*!	*, √	*, √	√, √
d. bookvie[4]		*!		√, *	√, √	√, √
e. mook	*!			*, *	*, *	√, √

4) One of the reviewers indicates that all obstruents have the same sonority scale phonologically. However, we follow the suggestion by Spencer (1996) that each sonority scale of stops and fricative has different degrees.

When one of two bases begins without an onset, the base without it tends to occupy the second part of blends, as shown in *cramble,* produced by blending *craw* and *amble.* Candidate (3c) loses to all remaining candidates in table 3 by not satisfying the high-ranked constraint Phono. The second candidate can be the best blended form since it incurs the least violation of Align Constraints.

Table 3. cr⟨aw⟩ + amble → cramble

(./cr/aw/.) + (./am./b/le/.)	Phono	Align (BW, Σ)	Align (BW, σ)	Align (BW, sub-σ)
a. camble		*, √	*, √	*!, √
☞ b. cramble		*, √	*, √	√, √
c. crble	*!	*, *	*, √	√, √
d. crawble		*, *!	*, *!	√, √

Next, table 4 represents an example in which Alignment constraints cannot choose the optimal output. Therefore, we need additional constraints requiring that the syllabic length of the blends should correspond to the syllable number of the second base.

Table 4. b⟨old⟩ +rash → brash

(./b/old/.) + (./r/ash/.)	Align (BW, Σ)	Align (BW, σ)	Align (BW, sub-σ)
a. bash	*!, *!	*!, *!	√, √
☞ b. brash	*, √	*, √	√, √
☞ c. boldash	√, *	√, *	√, √

(11) Additional constraints

a. Max-σ: Every syllable in the base word has a correspondent in the blend.

b. Dep-σ: Every syllable in the blend has a correspondent in the base word.

Blends that have fewer syllables than each base word violate the constraint

Max-σ, while blends that have more syllables than each base word violate the constraint Dep-σ. According to Bat-El (1996, p. 295), these constraints do not require identity of the segmental content of the corresponding syllables, as they refer only to syllable nodes, as illustrated in table 5. To apply the constraints Max-σ and Dep-σ, we will adopt Bat-El's idea, which evaluates candidates gradiently. That is, Max-σ and Dep-σ, in which each syllable in the blend lacks a correspondent in both base words, each count as one violation.

For example, in figure 3, there is no violation of Max-σ since every syllable in BW1 and BW2 has their respective correspondent in the blend. On the other hand, Dep-σ is violated twice in the BW1-to-blend relation since σ1 and σ2 in the blend do not correspond to BW1. In the relation between BW2 and the blend, there is no violation of Dep-σ, since all syllables in the blend have their correspondents in BW2.

/σσ, σσσσ/					Max-σ (BW, BL)	Dep-σ (BW, BL)
BW1	σ	σ			√	*!* ($\sigma_1\sigma_2$)
Blend	σ	σ	σ_1	σ_2	√	√
BW2	σ	σ	σ	σ		

Figure 3. How to evaluate Max-σ and Dep-σ, Bat-El (1995)

Table 5 shows that Dep-σ, in which each syllable in the blend should have a correspondent, forces the output to have the same number of syllables. Thus, candidate (5b) emerges as the optimal one.

Table 5. b⟨old⟩ +rash → brash

(./b/old/.) + (./r/ash/.)	Align (BW, Σ)	Align (BW, σ)	Align (BW, sub-σ)	Max-σ	Dep-σ
a. bash	*!, *!	*!, *!	√, √	√, √	√, √
☞ b. brash	*, √	*, √	√, √	√, √	√, √
c. boldash	√, *	√, *	√, √	√, √	*!, *!

Finally, table 6 represents that in the case of base words with disyllables, the decisive factor in selecting an appropriate form is closely connected with the stress of each base. Thus, candidates (6b) and (6c), showing the misaligment of each foot, should be eliminated, as we can see below.

Table 6. cafet⟨eria + audi⟩torium → cafetorium

(./c/à/./f/e/.)(/t/é/./r/ia/.) + (./àu/./d/i/.)(/t/ó/.r/i/.um/.)	Align (BW,Σ)	Align (BW,σ)	Align (BW,sub-σ)	Max-σ	Dep-σ
☞ a. cafetorium	√, √	√, √	√, √	√, √	√, √
b. caferium	√, *!	√, √	√, √	√, *	√, √
c. caditorium	*!, √	√, √	√, √	√, √	√, √

Next, we will provide an optimality-theoretic analysis for blends of English loanwords in Korean. Although little attention has been paid to blending in loanwords, this morphological word-formation process is very productive and rule-governed. Thus, we will present an analysis of English loanword blends, which can be dealt with as the result of the interaction of a set of phonological constraints and correspondence constraints similar to the analysis for English blends. However, the English words as sources of loanwords in Korean are so incompatible with Korean phonology that they must conform to the Korean phonetic and phonological grammar through lots of repair strategies.

We need the additional constraints Max-IO (seg) and Max-seg (BW2). The effect of Max-IO (seg) is significant when we choose the optimal output from inputs consisting of complex clusters in the onset. Max-seg (BW2) requires more segments in BW2 to have correspondents in the blends. This constraint is salient due to the requirement of preserving more of the segments in BW2 than of those in BW1 while creating English loanword blends in Korean.

(12) An additional constraint

Max-seg (BW2): Every segment in the second base word has a correspondent in the blend.

The constraint ranking for the loanword blending can be schematized as follows[5]:

(13) The constraint ranking
LeftAnchor, RightAnchor ≫ Align(BW,(sub-σ)), Align(BW, (σ)) ≫ Max-σ ≫ Dep-σ ≫ Max-seg (BW2)

The undominated Anchoring constraints are ranked highest since the blend needs to maintain the left edge of the first base word and the right edge of the second base word in blending. As mentioned earlier, we will not consider these constraints any more in that the word-formation of blending can be explained by the anchoring constraints. By having Align(BW, σ) and Align(BW, sub-σ) dominate Max-σ in the constraint hierarchies, we can predict the fact that switch points of base words are placed at a syllable or a sub-syllable of longer blends. In addition, as the number of syllables in English loanword blends is the same as that of BW2, Max-σ banning the syllable omission is ranked over Dep-σ.

Let us consider the blend formed by the combination and clipping of two words, *netizen* and *reporter*. Candidate (7b) violates Align(BW1, σ) because the second syllable in BW1 is not aligned with the right edge of BW1, while candidate (7d) violates Align(BW, σ) twice since the first syllable in BW1 is not aligned with the right edge of BW1 and the first syllable in BW2 is misaligned with the left edge of BW2 as well. The optimal form is candidate (7c) as it incurs fewer violations of Max-seg (BW2) than (7a).

Table 7. ne⟨tizen + re⟩poter → nep^{h}ot^{h}ə

IN: nɛtɪzən, rɪpɔtə BA: ne.t^{h}i.cin, ri.p^{h}o.t^{h}ə	Align (BW, sub-σ)	Align (BW, σ)	Max-σ	Dep-σ	Max-seg (BW2)
a. ne.t^{h}i.t^{h}ə	√, √	√, √	√, √	√, √	***!*
b. net.p^{h}o.t^{h}ə	√, √	*!, √	√, √	√, √	**
☞ c. ne.p^{h}o.t^{h}ə	√, √	√, √	√, √	√, √	**
d. ni.p^{h}o.t^{h}ə	√, √	*!, *!	√, √	√, √	*

5) We need an additional constraint such as *Complex under the influence of Korean phonology. In this paper, we will not consider it since this constraint is highest ranked. *Complex: More than one consonant association within any syllable position is prohibited.

In table 8, Max-IO(seg) follows the gradient evaluation depending on the number of segments that do not have correspondents in the blend. Even though only one syllable of the second base is clipped in the blend, considering the number of potential syllables in a Korean loanword, two syllables of the first base are attached to the second splinter.

Table 8. sala⟨ried–man + stu⟩dent → s'ælədənt^{h}ɨ

IN: sælərɪdmæn, studənt BA: s'æl.lə.ri.mæn, sɨ.t^{h}u.dən.t^{h}ɨ	Align (BW, sub-σ)	Align (BW, σ)	Max-σ	Dep-σ	Max-seg (BW2)
☜ a. s'æl.t^{h}u.dən.t^{h}ɨ	√, √	√, √	√, √	√, √	**
b. s'æl.lu.dən.t^{h}ɨ	√, √	*!, *!	√, √	√, √	***
c. s'æ.lu.dən.t^{h}ɨ	√, √	*!, *!	√, √	√, √	***
d. s'æl.lə.dən.t^{h}ɨ	√, √	√, √	√, √	√, √	***!*

However, under the given constraint ranking hierarchy, we cannot choose the optimal output. In order to remove an illegitimate candidate, we need a high ranked Onset-to-Onset constraint[6] requiring that the segments in the onset position be borrowed into only the onset position of syllables. As candidate (9a) violates the undominated constraint O-to-O, it cannot be optimal, in that /l/ in the onset of the input is realized as the coda.

Table 9. sala⟨ried–man + stu⟩dent → s'ælədənt^{h}ɨ

IN: sælərɪdmæn, studənt BA: s'æl.lə.ri.mæn, sɨ.t^{h}u.dən.t^{h}ɨ	O-to-O	Align (BW, sub-σ)	Align (BW, σ)	Max-σ	Dep-σ	Max -seg (BW2)
a. s'æl.t^{h}u.dən.t^{h}ɨ	*!	√, √	√, √	√, √	√, √	**
b. s'æl.lu.dən.t^{h}ɨ		√, √	*!, *!	√, √	√, √	***
c. s'æ.lu.dən.t^{h}ɨ		√, √	*!, *!	√, √	√, √	***
☞ d. s'æl.lə.dən.t^{h}ɨ		√, √	√, √	√, √	√, √	****

6) Onset-to-Onset (O-to-O): Onset segments in input should be onset in output.

The next table provides an analysis on how blends with overlapping can be explained. However, we need another constraint, Max-IO(seg), demanding that every segment in input has a correspondent in the blends. The constraint is ranked lowest in the ranking. In 10, since both Align(BW, sub-σ) and Align(BW, σ) are irrelevant to overlapping blends, they are satisfied vacuously for the overlapped candidate (10c). However, since non-overlapping candidate (10d) violates Max-σ and candidate (10a) commits four violations of Max-seg(BW2), they are both ruled out. Of the two remaining candidates, candidate (10b) is not qualified as the optimal form by Max-IO(seg), either.

Table 10. anti + ne)tizen → ænt^{h}ijin

IN: ænti, netɪzn BA: an.t$^{h}_{1}$i$_{2}$, t$^{h}_{3}$i$_{4}$.cin	Align (BW, sub-σ)	Align (BW, σ)	Max-σ	Dep-σ	Max -seg (BW2)	Max-IO (seg)
a. an.t$^{h}_{1}$i$_{2}$jin	√, √	√, √	√, √	*, √	***!*	****
b. an.t$^{h}_{3}$i$_{4}$.jin	√, √	√, √	√, √	*, √	**	***!*
☞ c. an.t$^{h}_{1,3}$i$_{2,4}$.jin	NA	NA	√, √	*, √	**	**
d. an.jin	√, √	√, √	√, *!	√, *	****	******

In this section, we have provided constraint-based analyses for blends both for English and English loanwords in Korean. In addition, we have presented how different each pattern of a process of blending appears. In the next section, we will summarize the analyses of this study.

5. Conclusion

In this study, we have analyzed some English blending words within the framework of Correspondence Theory. Although many scholars consider blending an unpredictable and arbitrary morphological process, it is highly predictable and systematic.

Blending can largely be categorized into two groups: those with and those without overlapping segments. In the case of overlapping blends, the identical segment has a role as a switch point, while in the non-overlapping blends a

switch point occurs at such prosodic or morphological boundaries as foot, syllable, sub-syllable (rhyme).

In the optimality theoretic analysis of English blends, alignment constraints usually control these switch points. Some well-formed constraints, such as Onset, SyllCon, and Phono, which are ranked higher than anchoring constraints, have considerable influence on the inter-and intra-syllable structure. When it comes to length, the number of overall syllables in the blended form is identical to that of the longer source word of the two and can be explained by the constraints Max-σ and Dep-σ. Finally, the stress pattern of the blended words follows that of the second base word.

In English loanword blends, unlike in English blends, we do not have to pay attention to Align(BW, BW(Σ)) since the Korean phonology system is exempted from word stress. In particular, in the case of non-overlapping blends, Align(BW, σ) plays a crucial role in demarcating splinters of two source words, which may result from the fact that Korean language is a syllable-timed language. In addition, the minimal word requirement for forming a new blended form causes the number of syllables to be at least two.

The constraint rankings for blends are summarized as follows:

(14) The constraint ranking for English blends
LeftAnchor, RightAnchor ≫ Align(BW, BW(Σ)), Align(BW, BW(σ)), Align(BW, BW(Sub-(σ)) ≫ Max-σ ≫ Dep-σ

(15) The constraint ranking for English loanword blends
LeftAnchor, RightAnchor ≫ Align(BW, BW(σ)), Align(BW, BW(sub-σ)) ≫ Max-σ ≫ Dep-σ ≫ Max-seg(BW2)

This study of blending sheds light on setting some foundation of an analysis and compares the disparity between the processes of forming blends in English and English loanwords.

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Hongwon Seo
Department of English Education
College of Education, Chonbuk National University
664-14, Deokjin-dong, Deokjin-gu
Jeonju 570-752, Korea
Phone: 82-63-270-4451
Email: hongwonseo@jbnu.ac.kr

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