

An Optimality Theoretic Account of English Clippings

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1. Introduction

Clipping, a kind of abbreviations, refers to the process whereby a word is shortened without changing its meaning or its part of speech from the original word (Bauer 1983:233). Clipped forms are constantly being produced and found in newspapers, magazines, and advertisements, therefore, they need to be studied systematically. Since clipped forms are used in somewhat informal and spoken speech, however, they have received comparatively brief treatments in the studies of word formation. Even in brief treatments of them, linguists seem to be more concerned with giving examples of the results of shortening than with examining the formal processes. Thus this study aims at proposing a more satisfactory explanation for English clippings within the framework of Optimality Theory proposed and developed by Prince & Smolensky (1993) and McCarthy & Prince (1993, 1994).

2. Minimality phenomena

In many languages words of one mora or one syllable are avoided because prosodically minimal bimoraic or disyllabic requirement is imposed on the size of well-formed words in these languages (Kenstowicz 1994:640). In English, for example, every lexical word contains at least two moras except monomoraic words which are not included in major lexical categories such as articles (*the, a*), conjunctions, complementizers, interjections, etc. In other words, there are no monomoraic lexical words,¹⁾ as illustrated in the following.

- (1) a. CVC : bit head sing tup
b. CVV : bee low pea two
c. CV : *bi *pe *si *tu

1) Non-lexical words are often exceptions to the minimality requirement. As Kiparsky (1983) notes, furthermore, lexical rules do not apply to non-lexical categories.

The two moras requirement imposed on lexical words is obeyed in lexical roots as well. This is especially evident in many borrowed roots from Greek and Latin. The majority of them are composed of C₀VC or C₀VV as follows.

- | | | |
|-------------------------|------------------|---|
| (2) C ₀ VC : | fin 'end' | - finale, finis, confine |
| | lum 'light' | - luminary, luminous |
| | man 'hand' | - manual, manuscript |
| | phil 'love' | - philanthropy, philharmonic, philogyny |
| | ped 'foot' | - pedal, peddler, pedestrian |
| | phan 'show' | - fancy, fantasy, fantastic |
| | vis 'see' | - envision, visual |
| C ₀ VV : | flu/flu:/ 'flow' | - fluid, fluent, |
| | my/mai/ 'muscle' | - myology, myocardium, myograph |

Non-lexical words such as *a* and *the*, however, are monomoraic. In addition, a large number of function words in English have a tendency to reduce to monomoraic or non-moraic sequences in normal speech. For example, *and* reduces to [n], *will* to [l], *am* to [m], *would* to [d] and so on, as illustrated below.

- | | | |
|------------------|---|--------------|
| (3) Tom and Mary | → | Tom 'n' Mary |
| You will go | → | You'll go |
| I am sincere | → | I'm sincere |
| Tom would go | → | Tom'd go |

On the contrary, content words are not subject to such reduction. Consequently, with the exception of non-lexical words and function words, English lexical roots and words which belong to major lexical categories (N, A, V, Adv) obey the minimal word requirement.

For such minimality of English words, Golston (1991) proposes the following.

- (4) minimal word : μ μ

(4) states that words in English consist minimally of two moras. Such a minimal word requirement is also reflected in English clippings as illustrated below.

- | | | | |
|------------------|---|--------------|------------|
| (5) a. pro[prou] | ← | professional | a'. *[pro] |
| b. prof[prɒf] | ← | professor | b'. *[prɒ] |

The examples in (5) show that clipped forms are possible only if they obey the minimal word requirement, therefore, (5a) containing a diphthong and (5b) containing a closing coda consonant are possible clipped forms, but (5a') and (5b') are not possible which end with a short vowel.

3. Earlier Treatments of English Clippings

Clipping refers to the process whereby existing words are shortened. These shortened words are often used to prove the prosodic minimal words. Generally the clipped forms retain the most prominent part in meaning of the source words or the root exclusive of affixes and truncate the remaining parts. When it is not easy to divide words into root and affixes, however, a clipping retains the initial parts of the source word and truncates the rest (Bauer 1983:233; Kreidler 1979:29), and, in my opinion, it is related to the principle of recoverability of deletion. Chomsky (1986:70) proposes a principle of recoverability of deletion to exclude from the grammar the type of unrestricted deletion transformations, as shown below.

- (6) A principle of recoverability of deletion states that an element can be deleted only if it is fully determined by a structurally related phrase containing its lexical features or it is a designated element.

It seems to me that such a principle of recoverability of deletion is applicable not only to sentences but also to words. In addition to the recoverability principle, I want to add the minimal word requirement for shortening words. Thus, in truncating words, the majority of clipped forms retain the initial two moras of the original word and delete the rest.

Previous treatments of English clippings, however, have noted that, although most clipped forms come from the initial parts of their source words, there are also some clipped forms from the final portions, and a few from the middle. On the basis of these observations, English clippings may be classified into three kinds as follows (Bauer 1983; Kreidler 1979; Marchand 1969).

(7) a. Back-clippings

lab(oratory)	doc(tor)	gas(oline)	exam(ination)
math(ematics)	gym(nastics)	memo(randum)	champ(ion)
dorm(itory)	tele(graph)	pub(lic house)	pop(ular concert)
para(graph)	demo(nstration)	intro(duction)	photo(graph)

pro(fessional)	prof(essor)	chem(istry)	cig(aret)
med(icine)	mod(ern)	sec(ond)	fem(inine)
b. Fore-clippings			
(omni)bus	(para)chute	(air)plane	(tele)phone
(violon)cello	(cara)van	(ham)burger	(heli)copter
(de)fence	(rac)coon	(de)spite	(peri)wig
c. Flank-clippings ²⁾			
(in)flu(enza)		(re)frige(rator)	
(pre)script(ion)		(de)tec(tive)	

It is not the case that, however, these clipped forms are necessarily from truncation. There are also some clipped forms which add affixes supplementarily after truncation as follows (Kreidler 1979; Marchand 1969).

(8) a. Pluralization

knucks	←	knuckles	mocs	←	moccasins
binocs	←	binoculars	caps	←	capital letters
digs	←	diggings	specs	←	spectacles

b. Suffixation of /i/(-y, -ey, -ie)

alky	←	alcoholic addict	Cincy	←	Cincinnati
Mickey	←	Michael	Bolshy	←	Bolshevik
chappie	←	chapman	juvie	←	juvenile delinquent
commie	←	communist	Okie	←	Oklahoman

c. Suffixation of -o

Jono	←	Jonathan	commo	←	communication
combo	←	combination	ammo	←	ammunition

d. Suffixation of -er

rugger	←	rugby	preggers	←	pregnant
brekker	←	breakfast	fresher	←	freshman

(8a) shows some clipped forms to which plural marker -s is added. These forms may be thought to preserve the initial parts and plural markers and to truncate the middle. But, as shown in three different kinds of clippings in (7), there are no clipped forms which retain the first and last parts and truncate the middle parts in English. Thus the examples in (8a) are assumed to be the result of shortening first and then adding productive plural suffixes. The examples in (8b) are chiefly

2) Flank-clippings here refers to clippings with the middle of the word retained. I thank Chin-Wu Kim for giving a term for clippings of this kind.

found in nick names or words with diminutive suffixes. This type has a final tense vowel [i], orthographically *-y*, *-ey*, or *-ie*. This final vowel may be thought to be parts of the source word or an addition to it. Finally the examples in (8c) and (8d) can be explained to be formed through the separate processes of clipping and affixation.

It is noted further that English clippings need to consider the phonological side. That is, it needs to be explained that, in the cases of *dorm(itory)*, *champ(ion)*, etc., the onset of the second syllable attaches to clippings, while, in *mic(rophon)*, *prog(ress)*, *Met(ropolitan)*, etc., only one consonant attaches to the coda of clippings. Kreidler (1979) gives the following explanation about the phonological tendency of clippings. First, when the source word contains one consonant between its first vowel and its second, the truncation is made to contain that consonant, as shown below.

- | | | | |
|---------------|---------------|-------------|-------------|
| (9) fed(eral) | math(ematics) | prof(essor) | ref(eree) |
| mod(ern) | lab(oratory) | fem(inine) | chem(istry) |
| cig(aret) | | | |

It seems that, however, in case of *prof(essional)*, *prof* is blocked to avoid the same form as a preexisting word with the identical clipped form *prof(essor)*. This phenomenon is referred to as blocking by Aronoff (1976). The fact that the truncation is made after the intervocalic consonant proves that the coda consonant bears a mora in English.

Second, when the source word has a sequence of two consonants between vowels, whether the clipped form retains both consonants or only the first of them depends on their relative sonority. The sonority hierarchy is generally taken to be as in (10) (Goldsmith 1990:111).

(10) Sonority hierarchy

vowels > glides > liquids > nasals > obstruents

(10) shows that, among consonants, liquids (/l/, /r/) and glides (/v/, /w/) are more sonorant than nasals (/m/, /n/), and nasals are more sonorant than obstruents such as stops, fricatives, and affricates. Above all, when a more sonorant consonant precedes a less sonorant one, both consonants are preserved in the clipped forms (e.g., *dorm(itory)*, *porn(ography)*, *tarp(aulin)*, *vamp(ire)*, etc.). But, both *convict* and *confidence* are shortened to *con*, neither to **conv* nor to **conf*, because *-nv* or *-rf* is not allowed to be final sequence in English. It may be

noted, too, that *combo* (from *combination*) must have an added vowel because *-mb* does not occur in word-final position. Finally, when the second consonants are less sonorant than the first of consonant cluster (e.g., *sub(marine)*, *prog(ress)*, *pub(lic house)*, *synch(ronization)*, etc.), or both consonants bear equal sonority (e.g., *gym(nasium)*, *cap(tain)*, *doc(tor)*, etc.), only the first consonants are preserved in the clipped forms. Consequently, when the clipped forms end with two consonants, it obeys phonotactic constraint and sonority principle.

Clippings, so far, have been dealt with in terms of shortening existing words. In Prosodic Morphology, however, clipped forms are not defined as an operation of deleting segments or syllables from a base form, but rather as the mapping of the base melody segments to a minimal prosodic template of the language (McCarthy & Prince 1986, 1995; Itô 1990; Mester 1990). As noted in section 2, the minimal prosodic word of English is of bimoraic size, therefore, only (11a) is the possible template for the clipped form of *influenza*. On the contrary, a smaller one-mora-sized template in (11b) would violate the minimal word requirement, and the other potential derivation of a monomoraic form in (11c) violates Template Satisfaction Condition stated in (12).

(11) *influenza*³

- | | | | | | |
|----|--|----|--------------------|----|--------------------|
| a. | [μ μ] | b. | [μ] | c. | [μ μ] |
| | $\begin{array}{c} \wedge \\ \end{array}$ | | \wedge | | \wedge |
| | (in) f l u : (enza) | | *(in) f l u (enza) | | *(in) f l u (enza) |

(12) Template Satisfaction Condition

All elements in a template are obligatorily satisfied. It is forbidden to leave any part of the morphological template unassociated with some prosodic unit (McCarthy & Prince 1986, 1995).

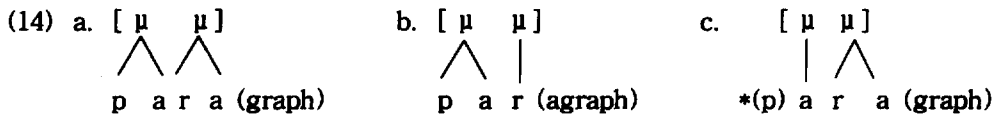
There are a lot of clipped forms which support the minimal word requirement of English. To satisfy the bimoraic size, English words are truncated to a heavy syllable which contains a long vowel or a short vowel followed by a coda consonant as shown in (13a) and (13b), not to a light syllable CV as illustrated in (13c).

- | | | | |
|---------|-------------------------------|---|-----------|
| (13) a. | C ₀ VV : flu[flu:] | ← | influenza |
| | bra[bra:] | ← | brassiere |

3) When *influenza* is shortened to *flu*, the clipped monosyllabic form /flu/ is lengthened to /flu:/ to become bimoraic.

- zoo[zu:] ← zoological garden
 Co[kou] ← company
- b. C₀VC : lab(oratory) doc(tor) gas(oline)
 math(ematics) gym(nastics) champ(ion)
 chem(istry) cig(aret) med(icine)
 mod(ern) sec(ond) fem(inine)
 (omni)bus (cara)van (rac)coon
 (peri)wig (de)tec(tive) vet(eran)
 pub(lic house) pop(ular concert)
- c. *[flu] *[bra] *[zu] *[ko]

The clipped words which we have seen so far satisfy the minimal word requirement of English. It appears that the minimality of clippings may well be explained in Prosodic Morphology (McCarthy and Prince 1986; Itô 1990; Golston 1991), which considers the minimality of clippings as a mapping segmental tier to the minimal prosodic template. However, the treatment of clippings in Prosodic Morphology has some weak points. That is, although all the examples in (14) are of bimoraic size and thus satisfy the minimal word requirement, nevertheless, (14c) is an ill-formed clipping. The ill-formedness of it may not be explained in Prosodic Morphology which concerns mainly phonological information. To explain the reason why *para* or *par* instead of **ara* is used as a clipped form of *paragraph*, rather, we need to consider both phonological and morphological information at the same time.



4. An Alternative Analysis

In this section, I will show that English clippings can be dealt with fruitfully within the framework of Optimality Theory which selects the optimal output by the system of well-formedness constraints. As noted in previous sections, clipped forms should satisfy the minimal word requirement which states that the minimal prosodic word of English is of bimoraic size. Therefore the following constraint should be satisfied in English clippings.

(15) FT-BIN (McCarthy & Prince 1993:90)

Feet must be binary under syllabic or moraic analysis.

FT-BIN in (15) states that feet must bear binary syllabic or moraic constituents. Since the clipped forms in (16) are not bimoraic and violate FT-BIN, they are not allowed in English.

(16) *[flu] *[bra] *[zu] *[ko] *[pro]

In order to be well-formed clippings, those monomoraic forms in (16) should be lengthened to bimoraic forms as shown in (17), leading to the violation of constraint FILL in (18) because FILL prevents epenthesis for satisfying template.

(17) [flu:] [bra:] [zu:] [kou] [prou]

(18) FILL : Epenthetic structure is prohibited.

In accordance with the principles of Optimality Theory based on the role of well-formedness constraints, constraints are not absolute but may often be minimally violated if such violation leads to the satisfaction of a higher-ranked constraint.⁴ Here I assume that FILL is not an almighty constraint but that it is minimally violable. The following tableau now presents an argument for ranking these two constraints, and shows how [flu:] is chosen as an optimal clipped form of *influenza* instead of *[flu].

4) The principles of OT are like the following (McCarthy & Prince 1994:336):

- a. **Universality**
UG provides a set Con of constraints that are universal and universally present in all grammars.
- b. **Violability**
Constraints are violable; but violation is minimal.
- c. **Ranking**
The constraints of Con are ranked on a language-particular basis; the notion of minimal violation is defined in terms of this ranking. A grammar is a ranking of the constraint set.
- d. **Inclusiveness**
The constraint hierarchy evaluates a set of candidate analyses that are admitted by very general considerations of structural well-formedness.
- e. **Parallelism**
Best-satisfaction of the constraint hierarchy is computed over the whole hierarchy and the whole candidate set. There is no serial derivation.

(19) Constraint Tableau, FT-BIN \gg FILL⁵⁾

Candidates	FT-BIN	FILL
a. \rightarrow fluu		*
b. flu	*!	

Since clipped forms in English are required to satisfy FT-BIN inevitably, violation of the constraint is fatal. The sign ‘!’ is added to ‘*’ in relevant cells to show its fatal violation. The fate of candidate is determined by the violation of higher-ranked constraint, so the loser’s cells are shaded, emphasizing the irrelevance of the constraint to the selection of the optimal output. Candidate (19a) satisfies FT-BIN but violates lower-ranked FILL which prohibits epenthesis. Candidate (19b) is of monomoraic size and thus violates higher-ranked FT-BIN. So (19a) which violates FILL dominated by FT-BIN is more optimal than (19b).

As mentioned in section 3, on the basis of the truncated parts, English clippings may be classified into three kinds, that is, back-clippings, fore-clippings, and flank-clippings. Although the clipped forms generally retain the most prominent part in meaning of the source word or the root exclusive of affixes and cut the rest, most of English clippings belong to back-clippings which preserve the initial part of the source word and truncate the remaining part (Bauer 1983; Kreidler 1979; Marchand 1969).

Let us consider, first of all, back-clippings. In addition to FT-BIN and FILL, there is ALIGN-LEFT as formulated in (20) which affects back-clippings by its interaction with other constraints.

(20) ALIGN-LEFT: align(Stem, L, PrWd, L)

A morphological constraint, ALIGN-LEFT in (20) says that the left edge of stem must coincide with the left edge of prosodic word. Let us now consider the interaction of constraints above to select the optimal output. The constraint tableau in (21) shows how *para* is chosen to be an optimal clipped form of *paragraph*.

(21) Constraint Tableau, FT-BIN \gg ALIGN-LEFT

Candidates	FT-BIN	ALIGN-LEFT
a. \rightarrow para		
b. ara		*

5) [flu:] is indicated by [fluu] in this study for convenience of exposition.

In the tableau above FT-BIN, though higher-ranked, can make no decision, because both candidates tie on FT-BIN and the decision is passed on to lower-ranked constraints. Here (21a) violates no constraints, while (21b) violates ALIGN-LEFT. Therefore (21a) is selected to be the optimal clipped form of *paragraph*.

Let us next consider cases of fore-clippings. It has been noted that the majority of clipped forms in English belong to back-clippings which preserve the initial parts of the source word. In addition to back-clippings, there are also some fore-clippings and a few flank-clippings. In cases of fore-clippings and flank-clippings, a generalization is that clipped forms preserve the most prominent part in the meaning of the source word or the root exclusive of affixes and then clip the rest. Consider the following examples of fore-clippings.

(22) (tele)phone	(violon)cello	(omni)bus	(para)chute
(heli)copter	(peri)wig	(rac)coon	(cara)van
(ham)burger	(air)plane	(de)fence	(de)spite

Above all, it is assumed that, in case of *telephone*, *tele* is blocked to avoid the complete same form by the prior existence of another word with the identical clipped form *tele(graph)* (Aronoff 1976). So *telephone* is shortened to *phone*, not *tele*. In the same manner, *air* in *airplane* and *ham* in *hamburger* are blocked not to be identical with their respective existing lexical items *air* and *ham*.⁶⁾ Thus *airplane* and *hamburger* are not shortened to *air* and *ham* but to *plane* and *burger* respectively. *Violoncello* is also clipped to *cello* to make a distinction from *violin*. The clipped form of *omnibus* 'carriage for all' is *bus* which is formed by truncation of prefix *omni-* (derived from Latin word *omnis* 'all').⁷⁾

The following clippings retain the prominent part in meaning which I regard as a semantic root. *Parachute* is a combined form of French words *parare* 'prepare' and *cheute* (derived from Latin word *cadere* 'fall') and preserves *chute* as a clipping which is a prominent part in meaning. *Helicopter* is also combined from Greek words *helico* 'a spiral' and *ptero* 'wing, feather', and is shortened to *copter*, which is a semantic root. And *(peri)wig* and *(rac)coon* are a kind of *wig* and *coon* respectively. Finally, *(cara)van*, *(de)fence*, and *(de)spite* are considered to retain their respective semantic roots. In fore-clippings

6) Kiparsky (1983) calls this phenomenon the Avoid Synonymy Principle, which states that the output of a lexical rule may not be synonymous with an existing lexical item.

7) In fact, *omni-* is not a prefix but a word in Latin. In English, however, it is used as a prefix in such words as *omnicompetent*, *omnidirectional*, *omnipotent*, *omnipresent*, *omniscient*, and so on.

as we have observed, clipped forms preserve a prominent part in meaning of the source word or the root exclusive of affixes and truncate the remaining part. Based on this observation, I propose ALIGN-ROOT constraint as formulated below.

(23) ALIGN-ROOT: align(ROOT, E, PrWd, E)

Here ROOT means either a morphological root exclusive of affixes or a semantic root which is the most prominent part in meaning. Another morphological constraint, ALIGN-ROOT in (23) states that the left and right edges of ROOT must match the edges of prosodic word. The constraint ALIGN-ROOT is used to explain not only fore-clippings but also flank-clippings. Let us now consider the interaction of constraints to select the optimal output. The constraint tableau in (24) shows how *wig* is chosen to be an optimal clipped form of *periwig*.

(24) Constraint Tableau, FT-BIN \gg ALIGN-ROOT

Candidates	FT-BIN	ALIGN-ROOT
a. \Rightarrow wig		
b. peri		*
c. ig	*!	*

With the exception of (24c) violating FT-BIN fatally, the decision of an optimal clipping is passed on to ALIGN-ROOT. (24a) satisfying all constraints, therefore, can be selected as an optimal clipped form of the word *periwig*.

ALIGN-ROOT in (23) has one more strong point. By constraint rankings such as FT-BIN \gg ALIGN-LEFT which are used to select the optimal output in back-clippings, **gaso* also might be predicted to be a clipped form of *gasoline*, because both *gas* and **gaso* satisfy FT-BIN and ALIGN-LEFT. However *gas* can be selected to be optimal with the help of ALIGN-ROOT, as shown in the constraint tableau below.

(25) Constraint Tableau, FT-BIN \gg ALIGN-ROOT

Candidates	FT-BIN	ALIGN-ROOT
a. \Rightarrow gas		
b. gaso		*

In (25) above FT-BIN, though higher-ranked, can make no decision, because both candidates tie on FT-BIN and the decision is passed on to lower-ranked ALIGN-ROOT. Here (25a) violates no constraints, but (25b) violates ALIGN-ROOT. Therefore *gas* is selected as an optimal output.

Let us finally consider flank-clippings, as shown below.

(26) Flank-clippings

(in)flu(enza)	(re)frige(rator)
(pre)script(ion)	(de)tec(tive)

In the examples above, (in)flu(enza) is a combined word from Latin words *in* 'in' and *fluere* 'flow', (re)frige(rator) is from Latin words *re* 'intensifier' and *frigerare* 'cold', (pre)script(ion) is from Latin words *prae* 'before' and *scribere* 'to write', and (de)tec(tive) is from Latin words *de* 'away from' and *tegere* 'to cover'.⁸⁾ On the basis of the etymological information as we have examined, we come to conclude that flank-clippings preserve ROOT of the source words and truncate the remaining parts. Let us now consider the constraint tableau in (27) which shows how *flu* is chosen to be an optimal clipped form of *influenza*.

(27) Constraint Tableau, FT-BIN > ALIGN-ROOT > FILL

Candidates	FT-BIN	ALIGN-ROOT	FILL
a. fluu			*
b. flu	*!		
c. flue		*	

In (27) above, there are no candidates which satisfy all constraints. But (27a) minimally violates the lowest-ranked constraint and therefore is selected to be the optimal clipped form of *influenza*.

5. Conclusion

I have argued in this study that a plausible account for English clippings can be offered in terms of Optimality Theory, which selects the optimal output by the interaction of constraints. English clippings may be classified into back-clippings,

8) The etymological meaning of each word here is from Partridge (1990).

fore-clippings, and flank-clippings according to the truncated parts. Most of English clippings belong to back-clippings which preserve the initial part of the source words and cut the remaining parts. It is proposed that, in back-clippings, those retaining two moras of the left edge of the source words are selected to be optimal by way of constraint rankings such as FT-BIN \gg ALIGN-LEFT.

For some fore-clippings and a few flank-clippings, ALIGN-ROOT is proposed, based on the observation that, in these types of clippings, clipped forms preserve the most prominent part in meaning of the source words or the root exclusive of affixes and truncate the remaining parts. Fore-clippings are explained by the interaction of constraints, guaranteed by FT-BIN \gg ALIGN-ROOT and flank-clippings are treated with constraint rankings such as FT-BIN \gg ALIGN-ROOT \gg FILL.

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