Linking and Intrusive *r* in English: a Correspondence Account*

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Kang, Seok-keun. 1998. Linking and Intrusive *r* in English: a Correspondence Account. ***Linguistics,*** 6-2, 243-262. The purpose of this paper is to reconsider linking and intrusive *r* in English. Accounting for the phenomenon within the framework of Correspondence Theory (McCarthy and Prince 1993, 1995), I show that linking and intrusive *r* can be interpreted as glide formation, and that once given this assumption, the phenomenon can be accounted for in a unified, satisfactory way in terms of a ranking of constraints. **(Wonkwang University)**

1. Introduction

In this paper, I present a new analysis of the so-called 'linking' and 'intrusive' *r* in English. In non-rhotic accents, *r* can occur prevocalically (e.g., 'fea[r] of', 'tuna[r] is'), but never preconsonantally or utterance-finally (e.g., 'fear the', 'tuna'). Traditionally, if such an occurrence of *r* is recognized as 'etymologically justified', the *r* is called "linking *r*" (e.g., the *r* in 'fea[r] of'); otherwise it is called "intrusive *r*" (e.g., the *r* in 'tuna[r] is').

There has been in the literature much discussion on linking and intrusive *r*, none of which, however, is satisfactory. In this paper, accounting for the phenomenon within the framework of Correspondence Theory (McCarthy and Prince 1993, 1995), I will claim that a constraint-based theory can provide a natural, satisfactory and unified

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account of it. In so doing, I assume with Broadbent (1991) that linking and intrusive *r* is a kind of glide formation. Following Yip (1993), I also assume that using the existing melody to fill the empty slot is not a violation of the constraint MSEG. Given the assumptions above, intrusive and linking *r* can be given a better account within a constraint-based theory. Especially, I will show that no r-insertion rule like McCarthy's (1993b) need be specified in the grammar, and that all we need is a set of some ranked, violable constraints.

The paper proceeds as follows. In section 2, I briefly review previous analyses and discuss their problems. Section 3.1 provides a brief introduction to Correspondence Theory, and section 3.2 presents an alternative analysis of the phenomenon above. Finally, section 4 summarizes the paper.

2. Previous analyses

Numerous accounts of linking and intrusive *r* have been proposed, notably those of Mohanan (1986), Nespor and Vogel (1986), Harris (1990), Broadbent (1991), and McCarthy (1993b). In this section, I will briefly review previous analyses of the phenomenon.

It is well known that in non-rhotic English, *r* can occur prevocalically as shown in (1a), but it never occurs preconsonantally or utterance-finally, even where it would be expected because of etymology or synchronic alternations as shown in (1b).

(1) a.	*r* Intrusion	*r* Linking
	The spa[r] is broken.	The spar is broken.
	He put the tuna[r] away.	He put the tuner away.
	The boat'll yaw[r] a little.	You're a little older.
b.		*r* Loss
	The spa seems to be broken.	The spar seems to be broken.
	He put the tuna down.	He put the tuner down.

The boat tends to yaw some. You're somewhat older.

As shown on the left in (1a), *r* is inserted in a prevocalic context, leading to merger of 'spa' and 'spar' as [spar], 'tuna' and 'tuner' as [tuwnər], and 'yaw' and 'you're' as [jɔr]. (1b) shows, however, that before a consonant or pause, merger occurs in the opposite direction, yielding [spa], [tuwnə], and [jɔ].

The descriptive generalizations underlying the alternations in (1) are as follows. First, *r* can occur only when followed by a vowel in the same utterance. That is, it cannot occur preconsonantally or utterance-finally. Second, the vowels *ɑ*, *ɔ*, or *ə* are never followed by a vowel in the same utterance. Whenever one of these vowels would be expected to occur prevocalically, intrusive *r* appears (e.g., 'sawing' is pronounced as [sɔrɪŋ]).

It has been a common assumption in previous analyses that the distribution of *r* is syllabically conditioned; that is, *r* is deleted in the coda position (or, equivalently, preserved only in the onset position), while it is inserted to resolve vowel hiatus when there are two adjacent heterosyllabic vowels. Accounting for alternations such as 'star' [sta] and 'star is' [stariz], for example, Mohanan (1986) says that *r* is not allowed to remain in the rhyme, and he posits a rule of r-deletion in (2) which applies post-lexically.

(2)

$$r \rightarrow \emptyset \; \underset{\begin{array}{c} R \\ | \\ x \\ | \end{array}}{\_\_}$$

Mohanan claims that at the post-lexical level, the *r* in 'star is' be resyllabified as the onset of the following vowel-initial syllable, but the *r* in 'star' cannot be resyllabified because there is no immediately adjacent rhyme, hence subject to the rule above. Commenting on the existence of intrusive *r* (cf. (1a)), Mohanan says that intrusive *r* is the

result of r-insertion, which also applies post-lexically. However, Mohanan's analysis bears certain shortcomings. First, as Broadbent (1991) points out, his analysis, which requires two post lexical rules (i.e., r-deletion and r-insertion), is arbitrary and non-explanatory in that it cannot answer questions such as 'why do we find r-insertion at all?' and 'what is the connection, if any, between r-insertion and 'r-resyllabification' and 'r-deletion' rules?' In addition, there are some crucial counterexamples to the syllabically-conditioned analysis of *r* insertion. That is, although linking *r* and intrusive *r* generally are not sensitive to any aspect of syntactic constituency or phrasing[1], there is one specific syntactic condition where intrusive *r* never occurs. Observe the examples in (3)[2].

(3) Lack of r intrusion after function words

Modal + reduced 'have':	He shoulda[ʃʊdə] eaten.
Verb + reduced 'to':	I'm gonna[gənə] ask Adrian.
Auxiliary + reduced 'you':	Did you[didʒə] answer him?
Reduced 'to, so, by':	To[tə] add to his troubles
Reduced 'do':	Why do[də] Albert and you
Reduced 'of':	a lotta[lɔtə] apples
'the' ([ðə] ~ [ðij] prevocalically):	the[ðə] apples

McCarthy asserts that the examples above constitute a prima facie case against the standard syllabically-conditioned analysis of *r* insertion, because they cannot receive intrusive *r* in spite of the fact that they all violate NO-HIATUS. As McCarthy points out, the distribution of intrusive *r* in (3) is unexplained in any analysis which assumes that it

1. Linking *r* and intrusive *r* occur word-internally ('conferral', 'withdraw[r]al'), in word + clitic collocations ('Timor is', 'Cuba[r] is', 'law[r] of the sea'), and in compounds and phrases ('for away', 'canola[r] oil'). For detailed discussion, see McCarthy (1993b).

2. All the data in (3) are taken from McCarthy (1993b).

serves to relieve a hiatus violation.

On the other hand, Nespor and Vogel (1986) assume that post-vocalic *r* is not present underlyingly. They treat linking and intrusive *r* as one phenomenon, proposing the following utterance domain rule of r-insertion.

(4) $\varnothing \rightarrow r \;/\; [\ldots \{a, ɔ, ə\} \_\_\_ V\ldots]_U$

However, Nespor and Vogel's analysis is unacceptable. That is, in their theory, there is nothing principled which rules out the possibility of a system having r-sandhi after [+high] vowels (a system in which, for example, 'seeing' might be pronounced 'see[r]ing'). There is a good reason why r-sandhi cannot appear after a high vowel, but no such reason figures in Nespor and Vogel's account (cf. Broadbent 1991).

Finally, McCarthy (1993b) provides an Optimality Theoretic account of the r-insertion and r-deletion phenomena mentioned above. His analysis is based on the two constraints in (5).

(5) a. CODA-COND
*VrX]$_\sigma$

b. FINAL-C
*V)$_{PrWd}$

The constraint CODA-COND prohibits *r* in post-nuclear position of a syllable, or, equivalently, requires that *r* be in the onset. This constraint is responsible for the loss of etymologic *r* preconsonantally and utterance-finally (McCarthy 1993b: 172). On the other hand, the constraint FINAL-C says that a Prosodic Word(PrWd) cannot end in a (short) vowel, though it can end in a consonant or glide (McCarthy 1993b: 176)[3]. The following tableau[4], for example, illustrates how the

3. McCarthy claims that since the vowels triggering *r* intrusion (ə, ɔ, a) are the only true vowels occurring in word-final position in English, the real effect of FINAL-C is to prohibit prosodic words ending in one of these three vowels.

4. Here and throughout, constraints are ordered from left to right in order of priority. "*" signals a violation, and "!" after an asterisk indicates a fatal

two constraints conspire to produce the optimal outputs:

(6)

(dots = syllable boundaries; R = inserted r; r.r & R.R = ambisyllabic r)

	Candidates	CODA-COND	FINAL-C
☞ i.	Wan.da. left. Ho.me. left.		*
ii.	Wan.daR. left. Ho.mer. left.	*!	
iii.	Wan.da. a.rrived Ho.me. a.rrived		*!
☞ iv.	Wan.daR. Ra.rrived Ho.mer. ra.rrived		

McCarthy says that the candidates in (6iv) obey CODA-COND because here the *r* is ambisyllabic. That is, the enforcement of CODA-COND is subject to the Linking Convention[5], and any *r* which is multiply linked to both coda and onset position is immune to this constraint. However, McCarthy's analysis is untenable. In Optimality Theory (henceforth, OT; Prince and Smolensky 1993), epenthesis must invariably insert a default phoneme.[6] As McCarthy himself notes, this poses a serious problem for his account of r-insertion, since *r* is not the default consonant of English.[7] McCarthy (1993b: 190) says,

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violation. The pointing hand "☞" denotes the optimal candidate. In addition, cells which do not participate in the decision are shaded.

5. Hayes (1986) defines the Linking Constraint as follows:

(i) The Linking Constraint
Association lines in structural descriptions are interpreted as exhaustive.

6. In OT, insertion of elements is handled by inserting an abstract place holder (graphically represented by an unfilled square) into strings in the Gen set. If such a place holder occurs in an optimal output, it is ultimately filled by the default phoneme, i.e., by the least marked segment (cf. Prince and Smolensky 1993).

"This means that the output form 'Wanda[r] arrived' must differ segmentally (melodically), rather than just prosodically, from the corresponding input form /Wanda arrived/. Thus this form goes beyond the standard Optimality-Theoretic view of the candidate set as consisting of all possible melody-conserving prosodic rearragements of the input. Melody is not conserved in 'Wanda[r] arrived', so it is necessary first of all to broaden the candidate set to include this form."

To broaden the candidate set, McCarthy proposes an r-insertion rule: ∅ → r. According to him, this rule is a phonologically arbitrary stipulation, one that is outside the system of Optimality. This rule is interpreted as defining a candidate set {Wanda, Wandar}, and this candidate set is submitted to the constraint hierarchy. That is, the rule enlarges the candidate set to include non-melody-conserving candidates like 'Wanda[r] arrived' (and '*Wanda[r] left), which are then evaluated by the constraint hierarchy in the familiar way (McCarthy 1993b: 190). However, this move is unsatisfactory in several respects. From a conceptual point of view, reliance on an arbitrary stipulation that is outside the system of Optimality is equivalent to giving up on the enterprise (Halle and Idsardi 1997). That is, data that cannot be accounted for by OT without recourse to rules are fatal counterexamples to the OT research programme. Besides, since Gen, in its current incarnation, will already generate candidates including {Wanda, Wanda?, Wandar} among others, the status of phonological rules within the grammar and their interaction with Gen must be made more precise (Blevins 1997: 234).

To sum up, in this section, I have provided a brief review of previous analyses, showing that none of them can account for the phenomenon under discussion in a satisfactory, unified way. In what follows, I will provide an alternative analysis couched within Correspondence Theory (McCarthy and Prince 1995).

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7. For arguments against default status for *r*, see McCarthy (1993b: 190).

3. An alternative analysis

3.1. An overview of Correspondence Theory

In this section, I will first provide a brief introduction to Correspondence Theory before I proceed to a Correspondence Theoretic account of the facts under consideration.

McCarthy and Prince (1993) first introduced the notion Correspondence into OT as a base-reduplicant relation, and then they (1995) extended it to the input-output domain and other linguistic relationships besides. Correspondence is a relation between two structures, such as base and reduplicant or input and output. McCarthy and Prince (1995) define the correspondence relation as follows:

(7) Correspondence[8]

Given two strings S_1 and S_2, **correspondence** is a relation $\boldsymbol{R}$ from the elements of S_1 to those of S_2. Elements $\alpha \in S_1$ and $\beta \in S_2$ are referred to as **correspondents** of one another when $\alpha \boldsymbol{R} \beta$.

In a correspondence-sensitive grammar, each candidate comes from Gen with a correspondence relation between the elements of the output and those of the input. Eval then considers each candidate pair with its associated correspondence relations, assessing the completeness of correspondence in S_1 or S_2, the featural identity of correspondent elements in S_1 and S_2, and so on (McCarthy and Prince 1995). Correspondent identity is regulated by faithfulness constraints, including those in (8).

(8) a. MAX-IO: Every segment of the input has a correspondent in the output.

b. DEP-IO: Every segment of the output has a correspondent in the

8. Lamontagne and Rice (1995), and Kang (1996) assert that correspondence be extended to the featural level. For discussion, see the references cited.

input.

The constraint MAX-IO, which reformulates PARSE-segment in Prince and Smolensky (1993), prohibits phonological deletion, while the constraint DEP-IO, which approximates the function of FILL in Prince and Smolensky (1993), prohibits phonological epenthesis. For instance, the following hypothetical tableau[9] illustrates how these constraints work:

(9) Input: /pauk/

	MAX-IO	DEP-IO
☞ a. pauk		
b. patuk		*!
c. pak	*!	

In (9), candidate (a) is selected as optimal, because it satisfies both MAX-IO and DEP-IO. Candidate (b) violates DEP-IO because *t* has no correspondent in the input. Candidate (c) also incurs a violation of MAX-IO due to the deletion of *u*.

Given this much theoretical background, in what follows, I will provide a Correspondence Theoretic account of r-insertion and r-deletion in English.

3.2. A correspondence theory approach

In this section, I will claim that linking and intrusive *r* can be interpreted as manifestations of the same glide formation process which gives rise to intervocalic *j* and *w* in some English dialects[10], and that

9. In this tableau, and henceforth, unranked constraints are separated by broken lines.

10. According to Broadbent (1991), in West Yorkshire phonology, a glide may

given this assumption, linking and intrusive *r* can be accounted for in a theoretically principled way.[11]

I begin the discussion by examining r-deletion. As already discussed in section 2, the consonant *r* never occurs preconsonantally or utterance-finally. That is, *r* is never found in the coda of a syllable (e.g., 'He put the tuner down', 'fear the', 'park', 'carton'). The constraint responsible for no appearance of coda *r* is given in (10).

(10) CODA-COND

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* X
  |
  rX]σ
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The constraint CODA-COND rules out any *r* that is assigned to the coda exclusively. But since intervocalic *r* (e.g., the *r* in 'fire away' [fajə rəwej]) is ambisyllabic, it is not subject to the constraint in light of Linking Convention. For example, the following tableau illustrates how the constraint CODA-COND conspires with the other constraints given in (8) to produce the optimal outputs:

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optionally appear when a vowel-final stem is followed by a vowel-initial morpheme, as exemplified below.

(i) see a [si:jə] do it [du:wit]

11. Assuming that all vowel-initial words are preceded by an empty onset, Broadbent (1991) claims that the occurrences of linking and intrusive *r* be consequences of the glide formation process which spreads some property of the final vowel (ə, a, ɔ) into the following empty slot. But Broadbent's account is untenable at least in two respects. First, Broadbent's assumption that every vowel-initial word begins with an empty onset is arbitrary in that there is no other supporting evidence for the existence of the empty onset. Second, Broadbent's analysis also cannot account for the data given in (3) above.

(11) (***R*** = ambisyllabic *r*)[12]

	CODA-COND	DEP-IO(V)	MAX-IO(C)
a. tuner down	*!		
☞ b. tune down			*
c. tunerV down		*!	
☞ d. ca***R*** away			
e. ca away			*!
f. carV away		*!	

In (11a-c), the first candidate contains *r* in the coda, which incurs a violation of CODA-COND. In (b), the *r* in the input is unparsed, violating MAX-IO. Candidate (c) also violates DEP-IO due to the insertion of a vowel. Although all the candidates violate a constraint each, the constraint hierarchy in (11) correctly chooses candidate (b) as optimal. On the other hand, in the case of (11d-f), candidates (e) and (f) violate MAX-IO and DEP-IO respectively, while candidate (d) satisfies all of the three constraints. As a result, candidate (d) is selected as the optimal output. Note that the ***R*** in (d) is not a violation of CODA-COND, because it is doubly linked to the coda of the syllable 'ca' and the onset of the following syllable.

r is inserted when the vowels {a, ɔ, ə} are followed by a vowel in the same utterance; otherwise, it does not appear. In other words, intrusive *r* occurs only when a word that ends in one of the three vowels {a, ɔ, ə} precedes a suffix or another word that is vowel-initial (e.g., 'sawing [sɔrɪng]', 'He put the tuna[r] away', 'The boat'll yaw[r] a little'). As illustrated in (3), repeated as (12), however, intrusive *r* does not occur after function words.

12. In McCarthy's (1993b) tableau given in (6) above, an inserted *r* is represented by R, and an ambisyllabic *r* by r.r. or R.R. Note, however, that in the tableau (11) and henceforth, ***R*** is used to represent an ambisyllabic *r*.

(12) Lack of *r* intrusion after function words

Modal + reduced 'have':	He shoulda[ʃʊdə] eaten.
Verb + reduced 'to':	I'm gonna[gənə] ask Adrian.
Auxiliary + reduced 'you':	Did you[didʒə] answer him?
Reduced 'to, so, by':	To[tə] add to his troubles
Reduced 'do':	Why do[də] Albert and you
Reduced 'of':	a lotta[lɔtə] apples
'the' ([ðə] ~ [ðij] prevocalically):	the[ðə] apples

In (12), all the vowel-final function words are followed by vowel-initial words, but no *r* is inserted. That is, the generalization is that intrusive *r* is limited to lexical word-final position (McCarthy 1993b, Halle and Idsardi 1997). Then, we need to ask 'why does intrusive *r* occur only when a word ends in one of the non-high vowels {a, ɔ, ə}?' In order to account for this, I propose the following constraint:

(13) *[-high])$_{PrWd}$

The effect of the constraint is to prohibit prosodic words ending in one of the three vowels {a, ɔ, ə}. Intrusive *r* is a response to violations of this constraint. Each lexical word corresponds to a Prosodic Word (Selkirk 1984, Nespor and Vogel 1986), so a sequence of lexical words like '(John)$_{PrWd}$ (saw)$_{PrWd}$ (Ed)$_{PrWd}$' is bracketed into sequence of Prosodic Words shown. In obedience to the constraint (13), intrusive *r* is obligatory at the end of the Prosodic Word 'saw'. However, because function words in English are usually procliticized to a following Prosodic Word, they are not in Prosodic Word final position, hence not subject to the constraint (13). This is why the function words in (12) do not undergo r-insertion.

Finally, let us turn now to the question 'why does *r*, not other consonants like *t* or *k*, occur after the vowels {a, ɔ, ə}? In order to answer this question, we need to consider the difference between onset

r and coda *r*. The intrusive *r* in 'Wanda[r] arrived' and the linking *r* in 'Homer arrived' are phonetically identical, but they differ from the onset *r* in 'Wanda returned' (Lass and Higgs 1984, Broadbent 1991, McCarthy 1993b, Halle and Idsardi 1997, Blevins 1997). As Halle and Idsardi (1997) suggest, if we assume that there is no resyllabification across word boundaries, this difference in quality of the *r* is then totally context-determined: one kind of *r* appears in coda, another *r* appears in onset.[13] The phonetic difference between the two kinds of *r*'s was elucidated by phonetic research. In reviewing Delattre's 1967 cineradiographic data, Lass and Higgs (1984) found significant differences between postvocalic coda *r* and onset *r*, as summarized in (14).[14]

(14) Review of Delattre's 1967 cineradiographic data for 46 American English speakers (Lass and Higgs 1984)[15]

	Onset /r/	Post-vocalic coda /r/
Retroflex	24	3
Apical-alveolar approx.	22	0.3
Palato-velar	50	86
dorsum active	70	66
tongue blade active	30	33
Lip-rounding	100	0
Pharyngeal constriction	100	100
Non-rhotic	0	11

As shown in (14), retroflexion accounted for 24% of all onset *r*'s. In contrast, in post-vocalic positions only 3% of *r*'s showed retroflexion,

13. McCarthy (1993b) assumes that this phonetic difference is reflected formally by the distinction between an *r* that is assigned to the syllable onset exclusively and an *r* that is ambisyllabic.

14. Some spectrographic data on the contrast are also given in Olive *et al.* (1993).

15. For a detailed discussion, see Delattre (1967), Lass and Higgs (1984), and Halle and Idsardi (1997).

while 86% of them became the advanced velar *r*. In addition, for all of Delattre's speakers, onset *r* involved lip-rounding, but coda *r* did not. The only constant in terms of articulation was pharyngeal constriction, which occurred in all *r*s, regardless of position. Blevins (1997: 231) notes some possible consequences for this observation; these comments are reproduced below:

> In other words, postvocalic coda /r/s in American English are typically realized as pharyngealized or pharyngealized palatal approximants..., while onset /r/s additionally involve lip-rounding and may also involve raised tongue tip and retroflexion. In terms of acoustic effect, constrictions in the palatal region and the lower pharynx produce lowered third formants...pharyngeal constriction in rhoticized vowels also results in auditory lowering and backing of vowels due to slight raising of F_1. Lip-rounding is also associated with lowering of the third formant (as well as the second), while retroflexion can lower F_4 or F_3 (in palatals), and generally brings F_2, F_3, and F_4 closer together....

Summarizing the data, Blevins (p. 232) says that weakly articulated postvocalic *r*'s have less extreme lowering of F_3 than onset rhotics, and are more perceptually similar to lowered and backed vocalic off-glides of preceding vowels. She also claims that r-loss as a sound change be a reinterpretation of the vowel-like rhotic glide as a nuclear vowel, due to the acoustic and perceptual similarities of weak rhoticization and central/back/round off-glide.

Given the facts above, it seems strange that the appearance of the post-alveolar median approximant *r* after {a, ɔ, ə} should be treated as a phenomenon wholly distinct from *j* and *w* glide formation. The natural assumption is that *j* appears after high front vowels (e.g., 'see a [si:j ə]'), *w* after high back vowels (e.g., 'do it [du:wit]'), and *r* appears after non-high vowels (cf. Broadbent 1991).[16] The complementary

16. Some evidence for the glide status for *r* is also found in Yukulta, a Southern Tangkic language. In this language, the absolutive case marker is '-a'.

distribution of the glides {*j*, *w*, *r*} can be captured by the following constraint:

(15) MSEG: Every segment must belong to a morpheme.
(McCarthy 1993a)

The constraint MSEG requires that all segments be part of a morpheme, and it will thus be violated by an epenthetic segment. Following Yip (1993), I assume that using the existing melody to fill the empty slot does not violate the constraint MSEG. For example, consider the following tableau taken from Yip (1993), which shows how MSEG works in selecting the correct onset form in Cantonese:

(16) Input: /i/

	PARSE	ONS	MSEG
i		*!	
ʔi			*!
ti			*!
☞ yi			
<i>	*!		

In (16), candidate 'yi' is selected as optimal. Note that the optimal candidate 'yi' *does* satisfy MSEG, because the existing melody *i* is used to fill the onset. On the other hand, the other candidates with *t* or *ʔ* as an onset violate MSEG.

Given the undominated constraint MSEG, we can account for why *r*, not *t* or something else, appears after non-high vowels, and also why only glides *j* and *w* occur after high front vowels and high back vowels respectively. That is, the constraint MSEG will correctly rule out

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When '-a' is added to vowel-final bases, ONSET triggers the occurrence of a glide homorganic with the preceding vowel: *y* after *i* as in 'kanti-ya' (wife-ABS), *w* after *u* as in 'ngawu-wa' (dog-ABS), and *r* after *a* as in 'rtangka-ra' (man-ABS) (cf. Keen 1983).

outputs such as '*draw[t]ing', '*see[t]a', and '*do[t]ing', selecting 'draw[r]ing', 'see[j]a' and 'do[w]ing' as optimal outputs. For instance, observe the tableau in (17).

(17) Input: /doing/

	MSEG
☞ a. dowing	
b. doting	*!
c. doring	*!
d. dojing	*!

In (17), insertion of consonants *t*, *r* or *j* after high back vowel *u* incurs a violation of MSEG, while insertion of *w* does not. As a result, candidate (a) is selected as optimal.

So far I have discussed how intrusive and linking *r* in English can be handled in a constraint-based approach. The required constraint ranking is given in (18).

(18) Constraint ranking: DEP-IO(V), MAX-IO(V), CODA-COND, MSEG ≫ *[-high])$_{PrWd}$ ≫ MAX-IO(C), DEP-IO(C)

The following tableaux exemplify how all the constraints discussed so far work to produce the optimal outputs:

(19) Input: /Wanda lied/

	DEP-IO(V)	MAX-IO(V)	CODA-COND	MSEG	*[-hi])$_{PW}$	MAX-IO(C)	DEP-IO(C)
☞a. Wanda lied					*		
b. Wandat lied				*!			*
c. Wandar lied			*!				*
d. Wand lied		*!					

(20) Input: /car repair/

	DEP-IO(V)	MAX-IO(V)	CODA-COND	MSEG	*[-hi])$_{PW}$	MAX-IO(C)	DEP-IO(C)
a. car repair			*!				
☞ b. ca repair					*	*	
c. carV repair	*!			*			

(21) Input: /Wanda is/

	DEP-IO(V)	MAX-IO(V)	CODA-COND	MSEG	*[-hi])$_{PW}$	MAX-IO(C)	DEP-IO(C)
a. Wanda is					*!		
b. Wandat is				*!			*
☞ c. Wanda***R*** is							*
d. Wand is		*!					

(22) Input: /shoulda eaten/ (parentheses = prosodic word)

	DEP-IO(V)	MAX-IO(V)	CODA-COND	MSEG	* [-hi])$_{PW}$	MAX-IO(C)	DEP-IO(C)
☞ a. (shoulda eaten)							
b. (shoulda***R*** eaten)							*!
c. (shouldat eaten)				*!			*
d. (should eaten)		*!					

In (19), candidate (a) emerges as optimal in spite of a violation of *[-high])$_{PrWd}$ due to the prosodic-final vowel *a*, because the other competing candidates violate more highly ranked constraints. In (19b), *t* is inserted, which violates both MSEG and DEP-IO(C). In (19c), the insertion of *r* incurs a fatal violation of CODA-COND as well as DEP-IO(C). Besides, (19d) violates MAX-IO(V) because the vowel *a* is

deleted. In (20), although candidate (b) with r-deletion violates *[-high])$_{PrWd}$ and MAX-IO(C), it is selected as optimal, because it fares better with the top-ranked constraints than the other alternative candidates. (21) is a case of r-intrusion. As illustrated here, when one of the vowels {a, ɔ, ə} is followed by another vowel in the same utterance, *r*-insertion produces the optimal output. Note that t-insertion in (21b) violates MSEG, but r-insertion in (21c) does not. Finally, (22) illustrates lack of *r* intrusion after function words. As discussed above, because function words in English are usually proclitic, they attach to a following Prosodic Word instead of forming one of their own. Therefore, the vowel *a* in candidate (22a) is not subject to *[-high])$_{PrWd}$, since it is not in Prosodic Word-final position[17]. (22a) satisfies all the constraints, so it is the optimal output.

4. Conclusion

So far accounting for intrusive and linking *r* in English by employing the framework of Correspondence Theory, I have claimed that intrusive and linking *r* can be interpreted as manifestations of the same glide formation process which gives rise to intervocalic *j* and *w*. I have also asserted that given this assumption, the phenomenon can be accounted

17. In fact, there is a case where intrusive *r* occurs after a function word: i.e., in phrase-final position (e.g., 'I said I was gonna[r] and I did', 'We oughta[r] if we're asked', etc.). Since procliticization is impossible in phrase-final position without violating the proper bracketing of prosodic categories demanded by the Prosodic Hierarchy, a phrase-final proclitic must be promoted to the full status of an independent Prosodic Word, as exemplified below (McCarthy 1993b, Selkirk 1984).

(i) Did you or didn't you? → {(didja)$_{PrWd}$}$_{PPh}$ {(or didn't ya)$_{PrWd}$}$_{PPh}$

In (i), the function word 'didja' must lie at the right edge of a Prosodic Word because it also lies at the right edge of a Phonological Phrase. As a result, the vowel *a* in the word is subject to the constraint *[-high])$_{PrWd}$, which triggers r-insertion. That is, the sentence in (i) is pronounced as [dɪdʒər ə dɪdən jə], which is correctly predicted by the constraint rankings in (18).

for in a unified way in terms of a ranking of constraints.

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