HIATUS RESOLUTION AND INCOMPLETE IDENTITY

ERIC BAKOVIĆ
University of California, San Diego

Abstract. Potential vowel hiatus between words in Chicano Spanish is always resolved using one of several strategies, the choice among these strategies being influenced by several factors. One of these is the avoidance of adjacent segment identity, but complete identity appears not to be required: differences with respect to the feature [±high] are ignored in a specific set of cases. The analysis of these facts presented here supports the general proposal advanced by Baković (2005ab) that the avoidance of adjacent similar segments is due to the simultaneous satisfaction a constraint NO-LONG, which penalizes completely identical adjacent segments only, and other independently motivated constraints in the grammar.

0. Introduction. In the Chicano variety of Spanish spoken in South Texas, potential vowel hiatus between words is always resolved using one of several strategies of hiatus resoultion (Hutchinson 1974, Reyes 1976, Clements & Keyser 1983, Schane 1987, Martínez-Gil 2000, 2004).[1] The choice among these different strategies is influenced by several factors, one of which is the avoidance of adjacent segment identity. Adjacent identical segments are often actively avoided or repaired by phonological processes (McCarthy 1986, Borowsky 1987, Yip 1988), but in some cases, as in the case of hiatus resolution in Chicano Spanish, complete segmental identity is not required: differences with respect to certain features may sometimes be ignored, as if merely *similar* adjacent segments were avoided.

The pattern of hiatus resolution in Chicano Spanish is fairly straightforward to describe.[2] One simplifying factor is something that differentiates Chicano Spanish from other varieties (such as Standard Spanish; Navarro Tomás 1957, Stockwell & Bowen 1965, Contreras 1969ab, Harris 1969, 1970): in Chicano Spanish, the otherwise expected stress on the vowels involved is irrelevant to the hiatus resolution strategy employed; if either vowel would otherwise be stressed, then the resulting vowel is stressed; otherwise, it is unstressed. In other Spanish varieties, the otherwise expected stress pattern directly influences the choice of hiatus resolution strategy (or even whether there is one).

First, as can be seen in (1), sequences of identical vowels are simplified to a single vowel. (Spanish orthography is close enough to underlying forms for present purposes; *guV* = /gV/, *qu* = /k/, *h* is silent.) We cannot decide *a priori* whether these examples exhibit deletion of the first

[1] I first became aware of these data by way of a problem set in John McCarthy's class notes (see McCarthy's *Introductory OT on CD-ROM*; a demo is available as ROA-371, http://roa.rutgers.edu/). I thank John for further directing me to Hutchinson (1974) and Reyes (1976), and to Fernando Martínez-Gil for directing me to later work, especially his own. Many thanks are also due to Cindy Kilpatrick for invaluable research assistance, and to two reviewers for constructive commentary. Any remaining errors are mine.

[2] Hutchinson (1974) distinguishes the results of hiatus resolution in two rates of speech, *andante* and *allegretto* (Harris 1969). I focus here on the grammar of the more "casual, colloquial" allegretto pattern, as do all the authors cited in the text.

vowel, deletion of the second, or coalescence of the two, but I maintain on analysis-internal grounds in §2 that it is coalescence and not deletion.

(1) Coalescence of identical vowels

a.	*lo odio*	[loðjo]	$/o_1 \# o_2/ \rightarrow [o_{1,2}]$	'hate-1SG it/him'
b.	*mi hijo*	[mixo]	$/i_1 \# i_2/ \rightarrow [i_{1,2}]$	'my son'
c.	*era así*	[eɾasi]	$/a_1 \# a_2/ \rightarrow [a_{1,2}]$	'it was like that'
d.	*se escapó*	[seskapo]	$/e_1 \# e_2/ \rightarrow [e_{1,2}]$	'escaped-3SG'
e.	*tu uniforme*	[tunifoɾme]	$/u_1 \# u_2/ \rightarrow [u_{1,2}]$	'your uniform'

Second, a word-final low ([+low]) vowel is deleted before any word-initial vowel.

(2) Deletion of low vowels

a.	*la iglesia*	[liɣlesja]	$/a_1 \# i_2/ \rightarrow [i_2]$	'the church'
b.	*paga Evita*	[paɣeβita]	$/a_1 \# e_2/ \rightarrow [e_2]$	'Evita pays'
c.	*casa humilde*	[kasumilde]	$/a_1 \# u_2/ \rightarrow [u_2]$	'humble home'
d.	*niña orgullosa*	[niɲoɾɣujosa]	$/a_1 \# o_2/ \rightarrow [o_2]$	'proud girl'

Third, if the first vowel is high ([+high]), it becomes a glide (/i/ → [j], /u/ → [w]). The result of hiatus resolution here is thus a rising-sonority diphthong.

(3) Gliding of high vowels

a.	*mi ultima*	[mjultima]	$/i_1 \# u_2/ \rightarrow [j_1u_2]$	'my last one-FEM.'
b.	*mi hebra*	[mjeβɾa]	$/i_1 \# e_2/ \rightarrow [j_1e_2]$	'my thread'
c.	*mi obra*	[mjoβɾa]	$/i_1 \# o_2/ \rightarrow [j_1o_2]$	'my deed'
d.	*mi árbol*	[mjaɾβol]	$/i_1 \# a_2/ \rightarrow [j_1a_2]$	'my tree'
e.	*tu hijo*	[twixo]	$/u_1 \# i_2/ \rightarrow [w_1i_2]$	'your son'
f.	*tu epoca*	[twepoka]	$/u_1 \# e_2/ \rightarrow [w_1e_2]$	'your time'
g.	*su Homero*	[swomeɾo]	$/u_1 \# o_2/ \rightarrow [w_1o_2]$	'your Homer'
h.	*tu alma*	[twalma]	$/u_1 \# a_2/ \rightarrow [w_1a_2]$	'your soul'

The behavior of mid ([–high, –low]) vowels is of particular interest here. If the first vowel is mid and the second vowel differs from it in [±low] or [±back], the first vowel glides — again resulting in a rising-sonority diphthong, as above.[3]

[3] Whatever is said about [±back] here and in what follows applies equally (and redundantly) to [±round].

(4) Gliding of mid vowels

a.	*me urge*	[mjuɾxe]	/e_1 # u_2/ → [j_1u_2]	‘it is urgent to me’
b.	*pague ocho*	[paɣjot͡ʃo]	/e_1 # o_2/ → [j_1o_2]	‘that s/he pay eight’
c.	*porque aveces*	[poɾkjaβeses]	/e_1 # a_2/ → [j_1a_2]	‘because sometimes’
d.	*tengo hipo*	[teŋgwipo]	/o_1 # i_2/ → [w_1i_2]	‘I have the hiccups’
e.	*como Eva*	[komweβa]	/o_1 # e_2/ → [w_1e_2]	‘like Eva’
f.	*lo habla*	[lwaβla]	/o_1 # a_2/ → [w_1a_2]	‘speaks it’

However, if the first vowel is mid and the second vowel disagrees only in [±high], then (as I maintain on analysis-internal grounds in §2) there is coalescence, not gliding.

(5) Coalescence of mid + high vowels

a.	*se hinca*	[siŋka]	/e_1 # i_2/ → [$i_{1,2}$]	‘kneels’
b.	*como uvitas*	[komuβitas]	/o_1 # u_2/ → [$u_{1,2}$]	‘like grapes-DIM.’

The last set of data here in (5) demonstrates the avoidance of adjacent similar segments that is the main focus of this paper. An underlying sequence of a mid vowel followed by an otherwise identical high vowel does not undergo gliding, as might otherwise be expected based on the behavior of mid vowels in (4); instead, this type of sequence undergoes the same process undergone by an underlying sequence of identical vowels (1); namely, coalescence. The feature [±high] thus appears to be ignored in the determination of adjacent segment identity: adjacent segments differing in this feature alone are similar enough to undergo coalescence as opposed to gliding. In cases like this, what counts as ‘similar’ must apparently be stipulated to include certain features and to ignore others. I follow Baković (2005ab) in arguing that the avoidance of adjacent similar segments in Chicano Spanish hiatus resolution is instead the result of the simultaneous satisfaction of several independently motivated constraints.[4]

1. Representational and other assumptions. Before turning to the analysis of these facts it is necessary to make a few background assumptions clear. First, I make the relatively standard assumption that glides are featurally identical to corresponding high vowels and that they are distinguished only by their syllabification. Thus, when high vowels /i, u/ are realized as glides [j, w], there is no featural change, but when mid vowels /e, o/ are glided, there is a change from [–high] to [+high].[5]

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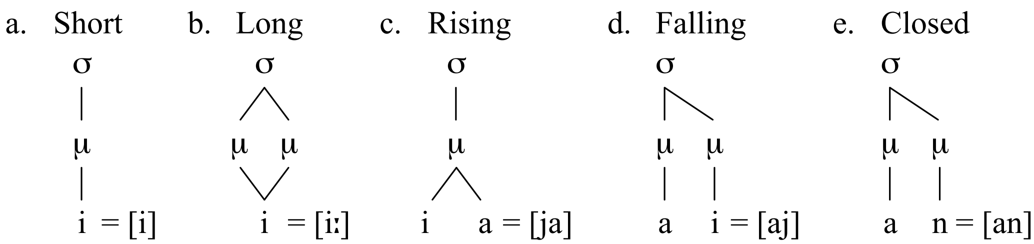
[4] As it turns out, the resulting analysis is in essential respects quite similar to the one independently proposed by Martínez-Gil (2004), who undertakes a somewhat more comprehensive analysis of Chicano Spanish hiatus resolution. The focus in the present paper is on how the analysis of these facts supports the hypothesis of Baković (2005ab) that partial identity avoidance is reducible to complete identity avoidance.

[5] Whether or not the realization of any underlying vowel as a glide violates some kind of faithfulness constraint — that is, in addition to the faithfulness constraint(s) violated by any featural changes — is not germane to the present

Following Schane (1987) and Hualde (1991), I assume that rising-sonority diphthongs have the branching nucleus (here, branching mora) structure shown in (6)c below, whereas falling-sonority diphthongs (6)d have the same branching rime (here, branching syllable) structure as closed syllables (6)e. Note that long vowels (6)b and rising diphthongs (6)c share the structural property of a many-to-one relationship between moras and segments (or a branching nucleus, in Schane (1987) and Hualde (1991)). Note also that high vocoids in open (6)a,b or closed (6)e syllables are phonetically realized as vowels; otherwise, they are phonetically realized as onglides (6)c or as offglides (6)d.

(6) Syllable structure assumptions (ignoring onsets)



Another assumption is implicit here: that glides cannot be featurally identical to nonhigh vowels.[6] Output candidates with nonhigh glides are assumed to be systematically ruled out by undominated markedness constraints. Substitutes for nonhigh glides that are sometimes observed in other languages, such as [ʔ] for /a/ in Ilokano (Hayes & Abad 1989, Rosenthall 1994), must also be ruled out by undominated constraints.

Next, I assume that long vowels and rising diphthongs violate a markedness constraint demanding a one-to-one relationship between moras and segments (ONE-TO-ONE, (7)a), while falling diphthongs and closed syllables violate a markedness constraint against syllables ending in anything other than a true vowel (NO-CODA, (7)b).[7]

(7) Constraints violated by complex syllable rimes

a. ONE-TO-ONE
Let μ be some mora and ξ some segmental melody such that μ dominates ξ. Assign a violation if either (i) μ also dominates some other segmental melody ξ′ or (ii) ξ is also dominated by some other mora μ′.

b. NO-CODA
Let σ be some syllable dominating two moras μ_1 and μ_2. Assign a violation if μ_2 dominates a segmental melody that is not also dominated by μ_1.

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analysis. (This depends in part on whether glides contrast with high vowels; see Hualde (2004) and references therein.)

[6] That is, in allegretto (see fn. 2). At the more “careful, but natural” andante rate, the first vowel shortens but apparently remains qualitatively intact (Hutchinson 1974).

[7] Whether or not there are separate constraints violated by rising diphthongs or closed syllables alone is not at issue here.

Two facts lead me to conclude that NO-CODA dominates ONE-TO-ONE in Chicano Spanish. First, the second of two vowels in potential hiatus across word boundaries never becomes a glide; in other words, the result of hiatus resolution is never a falling diphthong.[8] Second, a sequence of two nonidentical high vocoids is realized as a rising diphthong, not a falling one: *ci-udad* [sjuðað], *[siwðað]; *cuidado* [kwiðaðo], *[kujðaðo].

(8) NO-CODA ≫ ONE-TO-ONE

Candidates	NO-CODA	ONE-TO-ONE
a. ☞ /iu/ → [ju], /ui/ → [wi]		*
/iu/ → [iw], /ui/ → [uj]	* !	

Like other varieties of Spanish, though, there are falling diphthongs in Chicano Spanish: (i) those in which the first vocoid is [–high] (*jaula* [xawla], *peine* [pejne]), and (ii) those in which the sequence is word-final (*muy* [muj], *ley* [lej]).[9] I assume that the first class of cases is due to the markedness of non-high glides and faithfulness to the feature [±high], and that the second class of cases is due to an independent preference for words not to end in vowels (which could be attributed to FINAL-C; McCarthy 1993).

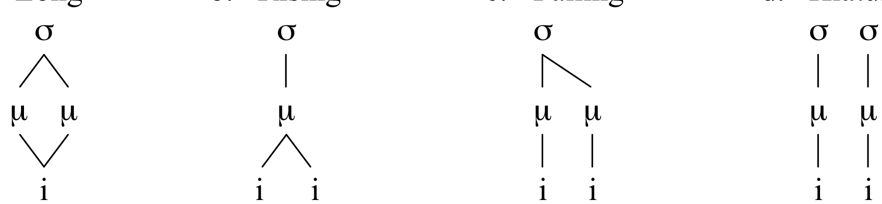
Spanish lacks long vowels. In addition to violating ONE-TO-ONE, I assume that long vowels violate the following markedness constraint.

(9) NO-LONG
Let ζ_1 and ζ_2 be two adjacent segmental melodies or moras. Assign a violation if $\zeta_1 = \zeta_2$ (i.e., if ζ_1 and ζ_2 are featurally identical segmental melodies, or if ζ_1 and ζ_2 are moras that dominate the same segmental melody).

The featural identity of high vowels and corresponding glides is relevant to the definition of the NO-LONG constraint and the representations that it penalizes.

(10) Representations violating NO-LONG

a. Long b. Rising c. Falling d. Hiatus



[8] The second of two vowels never deletes, either. I assume that this is due to an undominated faithfulness constraint penalizing deletion of word-initial segments/vowels (Casali 1996, 1997, Beckman 1998; *cf.* Martínez-Gil's (2004) use of ANCHOR-L).

[9] Preterite verb forms such as *fuí* [fwi] have final rising diphthongs due to the uniformity of stress in verbal paradigms (Harris 1983).

Since glides are assumed to be nothing more nor less than the phonetic interpretation of a [+high] vocoid in a branching mora (10)b or syllable (10)c, the representation of a long [+high] vowel (10)a is equivalent to the representation of a rising diphthong consisting of two [+high] vocoids (10)b; both violate ONE-TO-ONE as well as NO-LONG. The falling diphthong syllabification in (10)c is technically distinct, violating NO-LONG and NO-CODA, and the hiatus syllabification in (10)d violates NO-LONG and ONSET.[10]

(11) ONSET
Let σ be some syllable dominating some mora μ, which in turn dominates some segmental melody ξ. Assign a violation if μ is not preceded by another mora μ′ and ξ is not preceded by another segmental melody ξ′.

NO-LONG and ONSET are the centerpieces of the analysis presented in the next two sections, where I show that the apparent avoidance of incompletely identical adjacent segments in Chicano Spanish is the result of the simultaneous satisfaction of both of these constraints as opposed to the result of some constraint directly penalizing adjacent similar segments, where "similar" must be stipulated to ignore some features but not others.

2. Hiatus resolution. The prime mover in any analysis of hiatus resolution is the constraint ONSET (McCarthy 1993; *cf.* Borroff 2003). Hiatus is never tolerated in Chicano Spanish — at least not across a word boundary, where I am restricting our attention — and ONSET is thus undominated in the ranking. As noted in my description and superficial analysis of the facts in §0, there are three different strategies for hiatus resolution in Chicano Spanish: deletion, coalescence, and gliding. Each strategy results in violation(s) of different constraints in different contexts, and so all of these constraints must be dominated by ONSET.

(12) Resolution strategies and their constraint violations

a.	Coalescence under identity (1).	UNIFORMITY[11] Let ξ_1 and ξ_2 be two segmental melodies in the input. Assign a violation if ξ_1 and ξ_2 correspond to the same output segment $\xi_{1,2}$.
b.	Low vowel deletion (2).	MAX-V Let V be a vowel in the input. Assign a violation if V has no output correspondent.

[10] Word-initial and intervocalic [+high] vocoids are recruited as onsets and are consonantized (Harris 1983, Hualde 1991), thereby circumventing a NO-LONG violation.

[11] As a central part of his program to derive the lexical OCP from the interaction of output constraints alone, Keer (1999) proposes that there is no UNIFORMITY constraint. Coalescence under identity is thus violation-free in Keer's theory, but only intramorphemically — coalescence across morpheme boundaries violates another constraint requiring morphemes to be disjoint (Keer 1999:52*ff*). The role of UNIFORMITY in the analysis in the text would be attributed to this latter constraint under Keer's proposal.

c. Gliding (3), (4). ONE-TO-ONE (see definition in (7)a).

d. Mid vowel gliding (4). IDENT(high)
Let ξ_i be an input segment, and ξ_o its output correspondent. Assign a violation if ξ_i and ξ_o differ in their value of [±high].

e. Coalescence of mid + high (5). UNIFORMITY, IDENT(high)

When the vowels across a word boundary are identical, there is coalescence (12)a rather than deletion or gliding. This means that UNIFORMITY must be the lowest-ranked of the constraints identified in (12) (with the notable exception of IDENT(high), which is not violated by any serious competitor to coalescence under identity).

(13) Coalescence under identity

Candidates	ONSET	MAX-V	ID(high)	1-TO-1	UNIF
a. /e_1 # e_2/ → [e_1e_2]	* !				
b. /e_1 # e_2/ → [j_1e_2]			* !	* !	
c. /e_1 # e_2/ → [e_2]		* !			
d. ☞ /e_1 # e_2/ → [$e_{1,2}$]					*

Note that NO-LONG could in principle substitute for ONSET in the tableau above (and for ONE-TO-ONE in the case of identical adjacent high vowels; e.g., /i_1 # i_2/ → [$i_{1,2}$], *[j_1i_2]). The independent justification for ONSET's undominated ranking comes from the remaining cases of potential hiatus in which the input vowels are not identical.

Gliding of both high (12)c and mid (12)d vowels is the next best thing to coalescence. ONE-TO-ONE and IDENT(high) must be ranked below MAX-V, in order to rule out deletion in these cases; ONE-TO-ONE and IDENT(high) must also be ranked below IDENT(back), in order to rule out coalescence between vowels differing in [±back].

(14) IDENT(back)
Let ξ_i be an input segment, and ξ_o its output correspondent. Assign a violation if ξ_i and ξ_o differ in their value of [±back].

This is shown in (15) with a particularly informative example, two mid vowels differing only in [±back]. (Despite how it looks in this tableau, there is no necessary ranking between ONSET and IDENT(back); both are undominated, but IDENT(back) does not crucially dominate MAX-V in the way that ONSET does.)

(15) Gliding of (high and) mid vowels

Candidates	Ons	Max-V	Id(bk)	Id(hi)	1-to-1	Unif
a. $/e_1 \# o_2/ \rightarrow [e_1 o_2]$	* !					
b. $/e_1 \# o_2/ \rightarrow [o_{1,2}]$			* !			*
c. $/e_1 \# o_2/ \rightarrow [o_2]$		* !				
d. ☞ $/e_1 \# o_2/ \rightarrow [j_1 o_2]$				*	*	

This leaves deletion of low vowels (12)b and coalescence of mid + high vowels (12)e to be accounted for. Low vowels are deleted rather than glided because the latter strategy would involve a fatal featural change. Changing a low vowel to a glide would violate not only One-to-One and Ident(high), but Ident(low) as well.[12]

(16) Ident(low)
Let ξ_i be an input segment, and ξ_o its output correspondent. Assign a violation if ξ_i and ξ_o differ in their value of [±low].

Ident(low) must thus also be undominated; unlike Ident(back), however, Ident(low) must crucially dominate Max-V, as shown in (17).

(17) Deletion of low vowels

Candidates	Id(lo)	Ons	Max-V	Id(hi)	1-to-1	Unif
a. $/a_1 \# e_2/ \rightarrow [a_1 e_2]$		* !				
b. $/a_1 \# e_2/ \rightarrow [{}^{j}/_{w1} e_2]$	* !			*	*	
c. $/a_1 \# e_2/ \rightarrow [e_{1,2}]$	* !					*
d. ☞ $/a_1 \# e_2/ \rightarrow [e_2]$			*			

Whether a sequence of vowels differing only in [±high] undergoes coalescence or gliding is determined by undominated No-Long and Onset, as I show in §3 below.

3. Incomplete identity. High + mid and mid + high sequences are resolved in crucially different ways in Chicano Spanish. In the high + mid case, gliding occurs because the result is a high glide + mid vowel sequence and this does not violate undominated No-Long. This is shown in (18).

[12] Ident(back) might also be violated, depending (a) on the value of this feature on the low vowel (which is phonetically central) and (b) on which glide the low vowel becomes (as represented by the ambiguous symbol ‘$^{j}/_{w}$’ in (17)b).

(18) Gliding of high vowels in high + mid sequences

Candidates	No-Long	Ons	Max-V	Id(hi)	1-to-1	Unif
a. /i_1 # e_2/ → [i_1e_2]		* !				
b. /i_1 # e_2/ → [$e_{1,2}$]				* !		*
c. /i_1 # e_2/ → [e_2]			* !			
d. ☞ /i_1 # e_2/ → [j_1e_2]					*	

In the mid + high case, gliding fails because here the result would be a branching mora consisting of two identical high vocoids, and this *does* violate No-Long — in addition to Ident(high) and One-to-One, both of which we know from (15) to be ranked below Max-V. The result is coalescence, escaping violation of No-Long and violating both Ident(high) and Uniformity instead, as shown in (19).

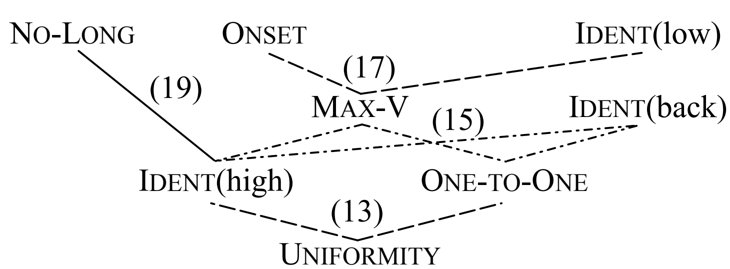
(19) Coalescence of mid + high sequences

Candidates	No-Long	Ons	Max-V	Id(hi)	1-to-1	Unif
a. /e_1 # i_2/ → [e_1i_2]		* !				
b. /e_1 # i_2/ → [j_1i_2]	* !			*	*	
c. /e_1 # i_2/ → [i_2]			* !			
d. ☞ /e_1 # i_2/ → [$i_{1,2}$]				*		*

Both gliding (19)b and coalescence (19)d of an underlying mid + high sequence violate Ident(high). This constraint thus fails to decide between the two candidates, and so the decision falls to the ranking of One-to-One above Uniformity, which was independently motivated by coalescence under identity (13). Max-V must also outrank Uniformity in order to rule out deletion (19)c; this ranking follows by transitivity from the independently motivated ranking of Max-V above Ident(high) by gliding (15), (18).

The final set of justified rankings is summarized in (20) below, with cross-references to each tableau in the presentation above that shows the relevant ranking(s).

(20) Final ranking



The overall analysis can be summarized as follows. Identical adjacent vowels — i.e., violations of NO-LONG and ONSET — are avoided via coalescence, while other cases of hiatus — i.e., violations of ONSET but not of NO-LONG — are avoided via gliding (if the first vowel is [–low]) or deletion (if the first vowel is [+low]). When adjacent vowels are similar, differing only in their value of [±high], gliding successfully avoids both ONSET and NO-LONG violations in one case (high + mid) but only avoids an ONSET violation in the other (mid + high). To avoid violation of NO-LONG in this latter case, it is handled in the same way that identical adjacent vowels are handled: via coalescence.

4. NO-LONG vs. NO-SIMILAR. One of the consequences of the analysis proposed here — that the avoidance of incomplete identity is the result of a constraint against complete identity (NO-LONG) and its interaction with other constraints — is that these other constraints must be independently active in the grammar in question: if they are high-enough ranked to help NO-LONG enforce incomplete identity avoidance, then they are in a position to crucially rule out candidates even in situations when NO-LONG is not at stake. The primary such constraint in this analysis is ONSET, which is indeed independently active; one needn't search beyond the basic data considered here to find ample evidence for that activity.

Compare this analysis with the arguably more direct alternative, in which some *ad hoc* constraint that I will call NO-SIMILAR penalizes adjacent similar segments. By definition, any features ignored by a NO-SIMILAR constraint is arbitrary; there is no necessary link between what is ignored by NO-SIMILAR and the rest of the grammar. This means that the NO-SIMILAR alternative does not rely on the activity of other constraints. Under the NO-SIMILAR view, an incomplete identity effect is relatively independent of other aspects the grammar of which it forms a part precisely because it does not depend on the ranking of other constraints to help define the feature or features that it ignores.

This difference between these two approaches has significant empirical consequences. For example, consider the same constraints and rankings proposed for Chicano Spanish above except that NO-LONG is replaced by NO-SIMILAR, which (arbitrarily) ignores any difference in [±high]. On the face of it, this would appear not to have any consequences since differences in [±high] are indeed ignored for the purposes of hiatus resolution. But recall that this ignorance is asymmetrical: mid + high sequences behave as if they are identical, but high + mid sequences do not. Both sequences would behave the same with the relevant NO-SIMILAR constraint, as shown here for the high + mid case.

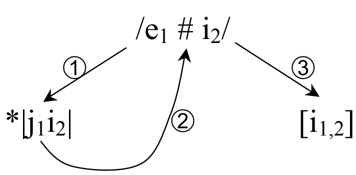
(21) Coalesence, not gliding, if No-Similar ignores [±high]
(Actual Chicano Spanish output candidate with gliding indicated with '❢'.)

Candidates	No-Sim	Ons	Max-V	Id(hi)	1-to-1	Unif
a. /i_1 # e_2/ → [i_1e_2]	* !	* !				
b. ❢ /i_1 # e_2/ → [j_1e_2]	* !				*	
c. /i_1 # e_2/ → [e_2]			* !			
d. ☞ /i_1 # e_2/ → [$e_{1,2}$]				*		*

When one considers the fact that sequences differing in [±back] still do undergo gliding, the overall pattern predicted here is intuitively rather strange: why should [je] and [wo] be excluded but [we]/[wi] and [jo]/[ju] allowed? By contrast, the asymmetrical ignorance of [±high] is explained rather than stipulated by the proposed analysis; gliding of mid + high incorrectly leads to complete identity but gliding of high + mid does not.

5. Counterfactual derivation. Another interesting aspect of the proposed analysis is that it requires that the conditions for coalescence be dependent on a *counterfactual result*. Specifically, it must be known what *would* happen to an underlying mid + high vowel sequence *if* it underwent gliding as otherwise expected, in order to determine whether there should have been coalescence in the first place. To appreciate this point, it is useful to consider what this analysis would have to look like in conventional derivational terms, as I show in (22).

(22) Counterfactual derivation



① = counterfactual gliding, resulting in disallowed adjacent identical segments

② = backtracking step to underlying form

③ = coalescence, resulting in surface form

The underlying form /e_1 # i_2/ here has a pair of adjacent vowels differing in [±high]. In order to determine whether coalescence is necessary, gliding "applies" and the result is a pair of adjacent identical vocoids. This *counterfactual derivation* is crucial to establish that coalescence should have applied instead. The derivation must thus backtrack to its prior state in order to then correctly undergo coalescence.

The proposed analysis highlights a crucial advantage of Optimality Theory over derivational approaches to phonological generalizations. The counterfactual output of gliding in (22) is simply another suboptimal output candidate in the OT analysis, and the correct choice between this candidate and the optimal one is made by comparing them and other suboptimal candidates in parallel against the set of ranked constraints, as shown in (19). (See Baković (2005b) for further discussion of this theoretical point.)

References

Baković, E. 2005a. "Antigemination, assimilation and the determination of identity." *Phonology* 23.

Baković, E. 2005b. "Counterfactual derivation and phonological opacity." Ms., *Rutgers Optimality Archive*.

Beckman, J. 1998. *Positional Faithfulness.* University of Massachusetts, Amherst: Doctoral dissertation.

Borowsky, T. 1987. "Antigemination in English Phonology." *Linguistic Inquiry* 18: 671-678.

Borroff, M.L. 2003. "Against an ONSET Analysis of Hiatus Resolution." Ms., *Rutgers Optimality Archive*.

Casali, R.F. 1996. *Resolving Hiatus.* UCLA: Doctoral dissertation.

Casali, R.F. 1997. "Vowel elision in hiatus contexts: Which vowel goes?" *Language* 73: 493-533.

Clements, G.N., and Keyser, S.J. 1983. *CV Phonology: A Generative Theory of the Syllable.* [*Linguistic Inquiry Monographs* 9]. Cambridge, MA: MIT Press.

Contreras, H. 1969a. "Simplicity, Descriptive Adequacy, and Binary Features." *Language* 45: 1-8.

Contreras, H. 1969b. "Vowel Fusion in Spanish." *Hispania* 52: 60-62.

Harris, J.W. 1969. *Spanish Phonology.* Cambridge: MIT Press.

Harris, J.W. 1970. "Sequences of Vowels in Spanish." *Linguistic Inquiry* 1: 129-134.

Harris, J.W. 1983. *Syllable structure and stress in Spanish: a nonlinear analysis.* Cambridge, MA: MIT Press.

Hayes, B., and Abad, M. 1989. "Reduplication and Syllabification in Ilokano." *Lingua* 77: 331-374.

Hualde, J.I. 1991. "On Spanish syllabification." In *Current Studies in Spanish Linguistics*, H. Campos and F. Martínez-Gil (eds), 475-493. Washington DC: Georgetown University Press.

Hualde, J.I. 2004. "Quasi-Phonemic Contrasts in Spanish." In *WCCFL 23 Proceedings*, B. Schmeiser, V. Chand, A. Kelleher and A. Rodriguez (eds). Somerville, MA: Cascadilla Press.

Hutchinson, S.P. 1974. "Spanish vowel sandhi." In *Papers from the parasession on Natural Phonology*, A. Bruck, R.A. Fox and M.W. La Galy (eds), 184-327. Chicago: Chicago Linguistic Society.

Keer, E. 1999. *Geminates, the OCP, and the Nature of CON.* Rutgers University: Doctoral dissertation.

Martínez-Gil, F. 2000. "La estructura prosódica y la especificación vocálica en español: el problema de la sinalefa en ciertas variedades de la lengua coloquial contemporánea." In *Panorama de la fonología española actual*, J. Gil Fernández (ed), 511-560. Madrid: Arco Libros, S.L.

Martínez-Gil, F. 2004. "Hiatus Resolution in Chicano Spanish." Paper presented at *Linguistics Symposium on Romance Languages XXXIV*, University of Utah.

McCarthy, J. 1986. "OCP Effects: Gemination and antigemination." *Linguistic Inquiry* 17: 207-263.

McCarthy, J. 1993. “A case of surface constraint violation.” *Canadian Journal of Linguistics* 38: 127-153.

Navarro Tomás, T. 1957. *Manual de pronunciación española.* New York: Hafner Publishing Co.

Reyes, R. 1976. *Studies in Chicano Spanish.* Harvard University: Doctoral dissertation.

Rosenthall, S. 1994. *Vowel/Glide Alternation in a Theory of Constraint Interaction.* University of Massachusetts, Amherst: Doctoral dissertation.

Schane, S. 1987. “The Resolution of Hiatus.” In *Papers from the 23rd Annual Regional Meeting of the Chicago Linguistic Society, Part Two: Parasession on Autosegmental and Metrical Phonology*, A. Bosch, B. Need and E. Schiller (eds), 279-290. Chicago: Chicago Linguistic Society.

Stockwell, R., and Bowen, J.D. 1965. *The Sounds of English and Spanish.* Chicago: The University of Chicago Press.

Yip, M. 1988. “The Obligatory Contour Principle and phonological rules: A loss of identity.” *Linguistic Inquiry* 19: 65-100.