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Hiatus Resolution strategies and the Obligatory Contour Princple: Èwùlù as a Case Study

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ABSTRACT

*The Èwùlù preferred syllable structure is the /CV/. Therefore, any syllable structures with two successive vowels in hiatus specifically, the /C**V**$_1$.**V**$_2$/ which violate the /CV/ is either adjusted to [Cj.V]/[Vw.V] or [C$_0$.V$_2$], both adjustments referred to as glide formation and vowel deletion rules respectively. Working within the framework of CV phonology (Clements and Keyser, 1983) and Feature theory (Chomsky and Halle, 1968) on explanation of these two hiatus resolution strategies, I argue that the Obligatory Contour Principle (OCP) effect (Leben, 1973; McCarthy, 1986) motivates the resolution strategies in order to avoid the adjacency of duplicated feature [syllabic] specified for /V$_1$/ and /V$_2$/ in hiatus, which otherwise violates the OCP. To validate this claim, I employ additional data that reflect partial hiatus, /V$_1$/ and /N/, sequence, where the features of /V$_1$/ and /N/ are distinct, with respect to the features [syllabic] and [consonantal]. In /V$_1$+N/ domain, it was revealed that the two OCP-triggered rules were blocked. I argue that the blocking of the glide formation and deletion rules is linked to unidentical features which sanction the OCP effect. The two cases in which rules are triggered or blocked are consistent with the OCP account (McCarthy, 1986; Yip, 1988) whereby languages under the influence of the OCP delete one of two identical features. I validate this claim in Optimality framework (Prince and Smolensky, 1993) by showing that the dominance of the markedness constraint, OCP over faithfulness constraint, MAX-IO optimally explains why /V$_1$/-/N/ is resistant to the same rules that modify /V$_1$/-/V$_2$/.*

Keywords: *Èwùlù, (Partial) hiatus, Glide formation, Vowel deletion, Obligatory contour principle*

INTRODUCTION

As in many Niger Congo languages, specifically, the West Benue Congo (WBC) group of languages, e.g. Igbo: Emenanjo (1972), Yoruba: Pulleyblank (1988) , Edo: Amayo (1976), Emai: Egbokhare (1990), Etsako: Elimelech (1976), Ghutuo: Elugbe (1972), Urhobo: Aziza (1997), Isoko: Donwa-Ifode (1985), and a wider spectrum of languages (Casali, 1996), Èwùlù[1], does not telorate hiatus (sequences of two vowels) within the word or at the juncture of two concantenated morphemes. This is because Èwùlù generally, like the aforementioned languages (with the exception of Urhobo), operates strictly a syllable structure that maximally contains a consonant followed by a vowel, except when morphemes are combined to form phrases. In other words, except in the operation of certain morphological process, and in a few irregular items illustrated in (3a-d), Èwùlù has preference for the CV syllable structure. Thus unmarked CVV syllable structure, which reflects vowels in hiatus of the type found in heterosyllabic context in the English word '***rea**lity*' (VV= r/**ɪ.æ**/ləti) and in the string '*k***ey i***n your password*' (V.V= k/**i:.ɪ**/n), is often simplified by adopting two resolution strategies:

- by coverting any first of two successive vowels in hiatus, that is, any (V$_1$) to a glide, [j], or [w], if V$_1$ is specified with the feature, [+high], e.g. /i, ɪ/ or /u, ʊ/ respectively.
- by deleting any V$_1$ specified with the feature [-high] as an alternative process.

The two independent rules in (a) and (b) do not apply if the second element (V2) is not a vowel. As it were, most descriptive accounts of hiatus resolution strategies (specifically the ones given by a number of the Africanist writers cited in the foregoing) have linked the phenomena to the need to simplify complex nuclei in order to preserve their unmarked CV syllable structure. In the present study, an alternative theoretical rather than descriptive account of hiatus resolution strategies is given. In this regard, the present paper, building on the theoretical assumptions Leben (1973), McCarthy (1986) and Prince and Smolensky (1993) argues that an OCP-based, OT account most plausibly and systematically captures hiatus resolution strategies.

Specifically, the deletion of [-high] V1 (or V2 or both), as it operates in a number of researched languages (see Casali, (1996), or the conversion of [+high] V1 vowels to to semi-glide [j] or [w] should better be regarded as repair rules driven by the strict constraint of the Obligatory Contour Principle (OCP) to avoid rule output violation. This principle was originally proposed by Leben (1973) to deal with tonal phenomenon; it was later revamped by McCarthy (1986) to explain why so many languages avoid sequences of adjacent identical segments. Because hiatus involves the adjacency of autosegmental identical elements (or features), as will be demonstrated in section 5, it is plausible to attribute the OCP effect as the motivating factor for the repair strategies militating againt the occurrence of adjacent identical features in order to ensure that the OCP is not violated. To Optimality theory equally reinforces this claim has it succinctly reveals the fact that the two repair strategies are explicable in terms of the dominance of markedness contraint, OCP over correspondence constraint, MAX-IO.

As will equally be demonstrated in section 5, structures that reflect hiatus but show evidence of dissimilatory effect, as in (6) and (12) show no susceptibility to the OCP effect. For this reason, they appear to resist the operations of glide formation or deletion rules. The forms, as will be shown in (12) thus reinforce the OCP claim which the present paper argues for as the motivating factor for hiatus resolution strategies. The OCP constraint, following McCarthy (1986, 1988) is succinctly stated in (1) as follows:

The Obligatory Contour Principle/OCP (Leben, 1973; McCarthy, 1986)	
(1)	Adjacent identical elements are prohibited

As suggested in the foregoing, Èwùlù vowels in hiatus (see particularly the forms in (3), (4) and (5) as opposed to the ones in (6)) are assumed to be the 'elements' referred to in (1), since the sequence of vowels in (3) - (5) featural identity with repect to phonological properties which are obvious in the forms in (7) through (11).

To corroborate the above claims, the paradigms of CV-phonology (Clements and Keyser, 1983) and Distinctive Feature model (Chomsky and Halle, 1968) are employed. It should be noted that the principle in (1) actually originated from the assumptions of the autosegmental (non-linear) theory (Goldsmith, 1976; 1990), where features are no longer seen as 'bundle of feature matrix' but properties arrayed on separate tiers, a clear departure from the SPE supposedly segments linearity theory.

Significantly, CV phonology and Feature theory are adopted here in order to support current theoretical assumption/analytical procedure which parses the Èwùlù prosody non-linearly and consequently show how hiatus in the language is nothing more than a phonological phenomenon with 'repetition' of features which totally violates the OCP, and which, as a result, the process of V1 gliding or V1 deletion is induced to avoid such ‘duplication’ problem.

AN OVERVIEW OF THE ÈW Ù L Ù SYLLABLE STRUCTURE

The Èwùlù syllable, following the basic definition of the syllable by Blevins (1995), is a phonological constitutent that is larger than the segment, smaller than the word, and contains exactly one sonority peak. The Èwùlù syllable is a simple one, simple in the sense that its onset and rhyme are maximally composed of a single consonant and vowel, yielding a CV syllable structure. Basically, two core syllable types exist in Èwùlù. They are the CV and V syllable structures. The latter structure, apart from representing a single vowel, can functionally stand for syllabic nasal consonants as well.

While the CV structure is predominantly found in monosyllabic verbs, the V structure is typically found in (pro)nominals. The V may be found in word initial or may serve as prefix in certain nominal morphemes. Examples of the core syllable types in the language are presented in (2), adopting Clements' and Keyser's (1983) 'flat structure' model to be discussed in section 4 as follows:

The CV template (flat structure) (Clemensts and Keyser, 1983)				
(2)	C V | | t á 'chew'	V | ọ 's/he'	or	V(=N̩) | ńchà 'soap'

Note: *the syllabic nasal consonant /n̩/ behaves like vowel in that it can bear tone. Here in the third column, it constitutes a syllable (peak) of its own and thus is dominated by a V.*

Following from the syllable types in (2), it is obvious that Èwùlù does not operate syllables that have complex onsets, complex nucleus and a simple/complex coda. In English loanwords

in the languge, English complex syllables are readily simplified by the insertion of a vowel. According to Utulu (2009), the simplification is done in order to break up source (English) vocabulary consonant clusters in Èwùlù, whereas English words with CV(CV) syllable structure remain unmodified. In view of the syllable types found in Èwùlù, it should at this point be clear why vowels in hiatus are characteristically subjected to modifications, ranging from the gliding of one of the hiatus elements to a deletion of one of them, the former process applying if the first vowel element is underspecified with [+high] feature.

PRESENTATION/DESCRIPTION OF DATA

In this section, Èwùlù data are presented to show the precise contexts where hiatus occurs. Besides, the data exemplify the two operating strategies by which Èwùlù adopts in resolving hiatus. The account here is intended to enable ease of analysis and understanding of the explanation of OCP-induced hiatus resolution strategies the present work attempts to establish in section 5. The data are presented in (3) to (5) as follows:

Èwùlù hiatus in lexical domain: hiatus resolution strategy (gliding of V_1)				
	UR		**SR**	
(3a)	/ór**ìè**/	→	[órjè]	'traditional name for the third day of the week'
	/àdʒ**íè**/	→	[àdʒjè]	'a greeting code in Èwùlù'
	/úf**ĭé**/	→	[úfjé]	'red'
	/díbì**ɛ̀**/	→	[díbjɛ̀]	'doctor (native)'
	/ɪf**ìè**/	→	[ɪfjè]	'(broad) daylight'
(b)	/bì**á**/	→	[bjá]	'come'
	/ɔp**ìà**/	→	[ɔ̀pjà]	'machete
	/ɔf**íá**/	→	[ɔ́fjá]	'bush'
	/ábí**à**/	→	[ábjà]	'drum
	/ɔr**íà**/	→	[ɔ́rjà]	'sickness'
(c)	/él**úé**/	→	[élwé]	'mush room'
	/n**úé**/	→	[nwé]	'swallow'
(d)	/ɔd**óà**/	→	[ɔdwà]	'a clan greeting code in Èwùlù'
	/ɛ̀b**ɔ̀á**/	→	[ɛ̀bwá]	'two'
	/ǹn**óà**/	→	[ǹnwâ]	'welcome'
	/áʃ**ɔ̀à**/	→	[aʃwa]	'annual'

Note: *'UR' and 'SR' stand for underlying and surface representations respectively*

As can be seen in (3a-d), the vowel sequences /ɪa/, /ɪe/, /iɛ/, /ʊa/ and /ue/ are hiatus in lexical domain, patterns which are irregular, given their frequency of occurrence in the language (Utulu, 2009). While these five vowel sequences are allowed underlyingly, they are not allowed in output forms. Consequently, the output leftward vowels, i.e. V1 (/ɪ/ and /ʊ/, /u/) haracteristically alternate to [j] and [w] respectively, under the operation of the rule of glide formation. Similarly, at the postlexical level (not limited to associative constructions) the same pattern/rule holds, where V1 is consistently glided, as shown in (4a-b) as follows:

Èwùlù hiatus in postlexical domain: hiatus resolution strategy (gliding of V_1)				
	UR		**SR**	**Gloss**
(4a)	/ísí + éwú/	→	[ísjéwù]	'goat head'
	/ímí + ánó/	→	[ímján!ǒ]	'animal nostril(s)'
	/ísí + /ɔ́má/	→	[ísjɔ́mã́]	'goodluck'
	/ísí + éɓè/	→	[ísjéɓè]	'gun handle'
	/ísí + éɓé/	→	[ísjé!ɓé]	'hawk/kite head'
	/ànì + ògò/	→	[ànjôgò]	'farm land'
	/ńtì + ázò/	→	[ńtjǎzò]	'fish ear'
	/árí + ɛ́ŋá/	→	[árjé!ŋã́]	'eye worm'
(b)	/énú + ànì/	→	[énwânǐ]	'up land'
	/òβú + ɔ́tʃǎ/	→	[òβwɔ́tʃǎ]	'white cap'
	/ónú + ɔ́má/	→	[ónwɔ́mã́]	'melodious voice'
	/àkú + ódʒíī/	→	[àkwódʒíī]	'black door'
	/ɛ̀ʃǒ + ɔ́kwó/	→	[ɛ̀ʃwɔ́!kwó]	'fever'
	/ómó + òké/	→	[ómwòké]	'baby mouse'
	/ɔ́ló + ɛ́ká/	→	[ɔ́lwɛ́kà]	'craft work'
	/ḿβó!ló + ósísí/	→	[ḿβó!lwósísí]	'fruit'

As shown in (4a-b), it will be observed that, in all examples provided, hiatus is typically of the high vowel-non-high vowel sequence. As the pattern suggests, once V1 is underspecified with

the feature [+high], it normally would glide to a semi-vowel phonetically closest to it. However the gliding process may be suspended once V1 is specified with the feature [-high]. This then motivates the alternative strategy: /V1/-deletion. This alternative process is exemplified in (5a-b) as follows:

Èwùlù hiatus in postlexical domain: resolution strategy (deletion of V_1)				
	UR		**SR**	**Gloss**
(5a)	/ìtè + ɔ́kwó/	→	/ìtɔ̌!kwó/	'hot pot'
	/ósè + ànì/	→	[ósânǐ]	'a kind of soup in Èwùlù'
	/ɛ́ŋá + /úkwú/	→	[ɛ́ŋ̊ǔkwú]	'greed'
	/íβé + ànì/	→	[íβânǐ]	'land dispute'
	/ ɛ́dʒá + ɔ́tʃá/	→	[édʒɔ́tʃá]	'white sand'
	/ɔ̀βà + úkwú/	→	[ɔ̀kpǔkwú]	'big cock'
	/èβà + ɔ́kà/	→	[èkpɔ̌kà]	'maize bag'
	/ɛ́ká + íké/	→	[ékí!ké]	'stinginess'
	/íβá + ɔ́kà/	→	[íβɔ́kà]	'corn cake'
(b)	/té + ófé/	→	[tó!fé]	'cook soup'
	/ɓá + ɛ́ɓè/	→	[ɓéɓè]	'shoot gun'
	/tá + ázɔ̀/	→	[tázɔ̀]	'eat fish'
	/dʒé + ídʒè/	→	[dʒídʒè	'walk'
(c)	/èʃʊ́ + ónɔ̀/	→	[èʃónɔ̃]	'wall'
	/énú + úgwú/	→	[énú!gwú]	'hill'
	/énú + ónɔ̀/	→	[énu̇̃nɔ̃]	'roof' or 'house top'

As demonstrated in (3)-(5), it is evident that /VV/ sequence (hiatus) is not allowed in Èwùlù. Its 'dispreference' is the reason for the operations of the two hiatus resolution strategies. Once input syllable structures violate the output (unmarked) CV syllable structure, /V1/-gliding or /V1/-deletion rule is motivated. However, if a sequence involves /V1 N/ in what is tagged 'partial hiatus' in the current study, neither /V1/-gliding nor /V1/-deletion rule operates. In fact, the two hiatus resolution strategies are literally suppressed. Consider the /V1 N/ data and the pattern in (6) as follows, where N represents tone-bearing syllabic nasal consonant:

Èwùlù 'partial hiatus' in postlexical domain (suspension of V_1 gliding/deletion)				
	UR		**SR**	**Gloss**
(6)	/èβ**à** + ńnú/	→	[èβ**àń**nu̇̃]	'salt bag'
	/íf**é** + ńtà/	→	[íf**éń**tà]	'trivial thing'
	/ís**í** + ŋ̀gàdʒì/	→	[ís**íŋ̀**gàdʒì]	'spoon handle'
	/ár**í** + ńtì/	→	[ár**íń**tì]	'ear worm'
	/ɔ́sɔ́ + ńdɔ̀/	→	[ɔ́sɔ́**ń**dɔ̀]	'stampede'
	/ńr**í** + ńtà/	→	[ńr**íń**tà]	'small food'
	/ís**í** + m̀pá/	→	[ís**ím̄**pā]	'pincer handle'
	/án**ó** + ǹchì/	→	[án**ǒǹ**chì]	'grasscutter meat'
	/m**é** + ǹdʒɔ́/	→	[m**ḗn̄**dʒɔ̄]	'commit sin'
	/ɓ**á** + m̀bá/	→	[ɓ**ám̄**bā]	'fight (wresting match)'

As can be seen in (6), V1 is rather preserved in this context. It should also be observed that all [+high] V1 are not glided neither are their [-high] counterparts deleted as expected, following the generalisation in (3) – (5). The reason for the suppression of V1 gliding or deletion in (6) will be made obvious in section 5.

THEORETICAL ASSUMPTIONS

The objective of this present work is to argue that the OCP effect is the motivating factor for the operations of two independent phonological rules: (1) glide formation, and (2) /V1/-eletion for resolving hiatus in Èwùlù, as is the case in a number of languages suggested in the literature, see particularly (Casali, 1996). To provide explanation for the trigger of the phonological rules, two relevant theories are appealed to. The first one is CV phonology and the second one is Feature theory. The former theory was proposed by Clements and Keyser (1983) to introduce a new approach to syllable representation, following Khan's (1976) hierarchical approach to the syllable.

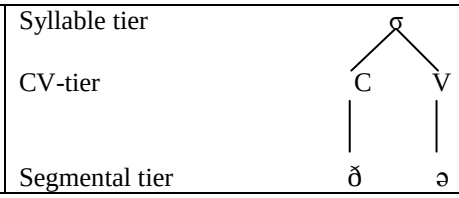
The theory analyses the syllable autosegmetally as a three-tiered structure, which include (1) the syllable tier, (2) CV tier, and (3) the segmental tier. Its central claim is that the terminal elements of syllable trees are not segments (vowels and consonants) but rather the units of the CV-tier. In this regard, the model dispenses

with the notions of onset, rhyme and coda but straightforwardly maps melodies (i.e. segments) directly to the CV-tier (see illustrations in (2)). For this reason, the model has been tagged the 'flat structure' (Blevins, 1995).

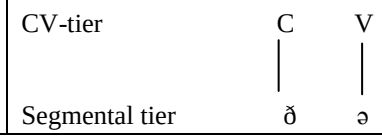
According to Clements and Keyser, the CV tier defines functional positions in syllable structure where the segments may occupy. And given the fact that some phonological rules apply independently of the CV tier and the segmental tier, (as will be shown in the current analysis), the model (until the introduction of the moraic theory by Hyman (1985), Hayes (1989)) has been widely accepted to be suitable in handling complex segments such as complex vowels, geminates, lengthening phenomenon, and the like. The three-tier structure of the CV phonology looks thus, citing the weak form of the English definite article 'the':

The flat structure derived from the three-tiered structure of the CV phonology theory (Clements and Keyser (1983)

(7a)



(b)

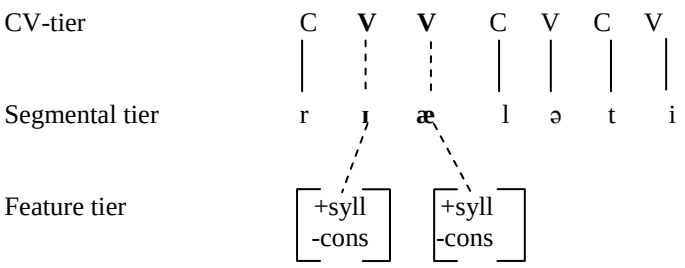


In this flat structure, which subsequently does away with the syllable tier as exemplified in (2) and (7b), it is proposed that syllable peaks are dominated by the V node, while non-syllabic peaks, that is, the onset and coda by the C node. Aside its typographical convinience, the CV model is suitable in succinctly representing hiatus, since two successive vowel elements in a string will be interpreted as composed of a /VV/ sequence.

To complement the paradigm of the CV theory which requires the specification of functional features in the derivation in the analysis of Èwùlù hiatus resolution strategies in the current analysis, the feature theory is employed. The feature theory is a sub-theory of Standard Generative Phonology proposed by Chomsky and Halle (1968). It theoretical paradigms enable it to capture the inherent articulatory features of natural class of sounds which are affected by some phonological rule. The adoption of feature theory is necessary in order to transparently capture the fact that hiatus, by its very structure, is simply a phenomenon that displays two adjacent/successive vowel features, each of which is specified with the same properties [+syllabic], [-consonantal], a fact which will be missing if it were ignored here. The schema in (8) transparently captures this fact in the English word reality /rɪ.æ.lə.ti/ initially illustrated in section 1:

The flat structure and the feature theory

(8)



As can be seen in (8), the features [+syll] and [-cons] capture the inherent 'repetition of featuers' at the feature tier, even though at the segmental tier it is not so obvious, since both vowels are qualitatively different from each other. Clearly, scanning the feature tier, it will be observed that the first vowel which is a high vowel and the second one low vowel, are specified for the same feature [+syllabic], [-cons]. This fact would be missing if the feature tier were ignored. Thus the adoption of the feature theory here is justified.

Strangely, however, because English tolerates vowel clusters, as mentioned earlier, most evident in the existence of diphthongs and triphthongs in the language (Roca and Johnson, 1999; Roach, 2000), resolving hiatus obviously becomes unnecessary. However, in Èwùlù, hiatus is strictly avoided as it violates its unmarked CV syllable structure. Therefore, as will be argued in section 5.0, the OCP appears

to be consistently obeyed by triggering glide formation and elision rules that must rid Èwùlù of the rather recursive hiatus structure, even though it is suppressed in English as shown in (8), a situation which makes the OCP a language specific principle rather than a universal phenomenon in this instance.

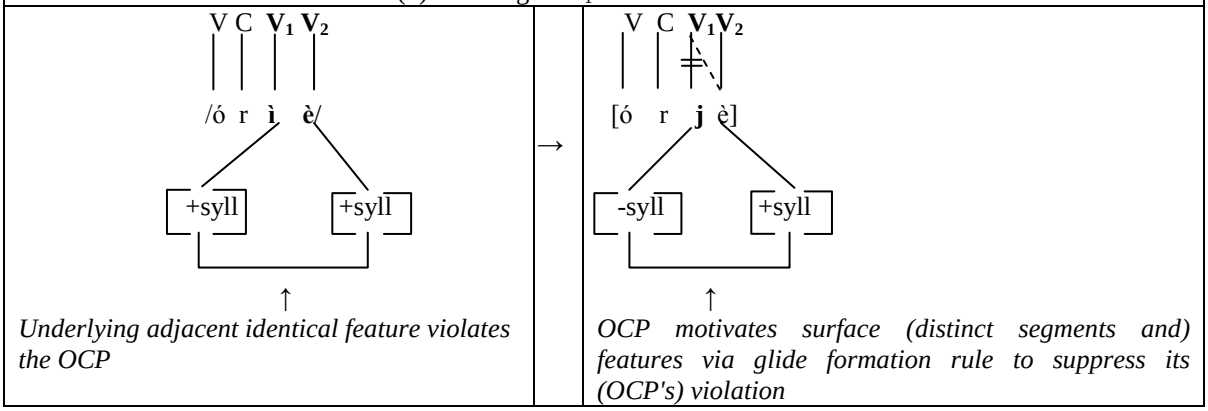
THEORETICAL ORIENTATION

OCP-Based Analysis

Èwùlù avoids hiatus, therefore, every underlying representation with hiatus is resolved by the gliding or deleting of V1. The first process as mentioned earlier applies if V1 is a high vowel, otherwise it is deleted. V2 is exempt from these rules because Èwùlù data predicts it as a V1 only language. In the current analysis, hinged on the theoretical assumptions of CV-phonology and feature theory, it is argued that the OCP motivates the two hiatus resolution strategies in (9) and (10). The two strategies apply in order to obey OCP constraint earlier stated in (1). This view is insightfully laid bare in (9), and subsequently in (10) through (12), taking the first example from each of the forms presented in (3), (4), (5) and (6):

Glide Formation as Hiatus Resolution Strategy in Lexical Domain:

(9) Gliding of V_1 in Lexical Domain



Underlying adjacent identical feature violates the OCP

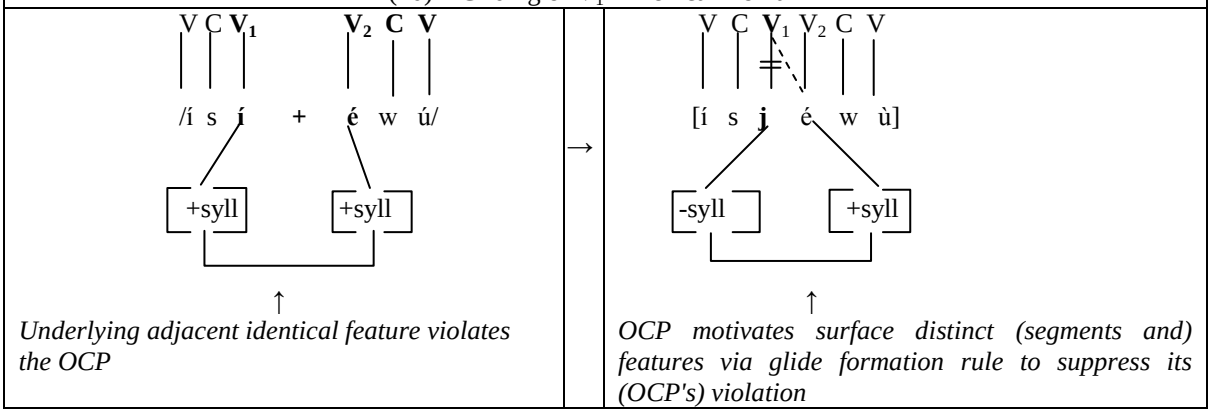
OCP motivates surface (distinct segments and) features via glide formation rule to suppress its (OCP's) violation

As the multitiered representation-cum distinctive feature in (9, first column) suggests, Èwùlù hiatus reflects a phenomenon that "repeats" the same feature which is not apparent in the descriptive analysis in (3a-d). The inherent recursive feature, following the OCP empirical content in (1), explicitly motivate the rule of glide formation which desyllabifies V1, converting the feature [+syllabic] to [-syllabic] as in (9, second column).

At the segmental/melodic tier, it is obvious that [j] and the next vowel are not the same. But in a more principled fashion, the feature tier shows more succinctly the fact that both elements which are inherently identical underlyingly are now altered phonetically. The alteration which is triggered by the OCP now makes the identical features distinct in order to avoid the OCP's violation.

Glide Formation as Hiatus Resolution Strategy in PostLexical Domain:

(10) Gliding of V_1 in Lexical Domain



Underlying adjacent identical feature violates the OCP

OCP motivates surface distinct (segments and) features via glide formation rule to suppress its (OCP's) violation

The generation of this rather 'pervasive pattern of dissimilation', as Clements and Hume (1995) put it, is meant to block or suppress the duplication and adjacency of the same underlying feature which otherwise violates the OCP. Essentially, all the forms in (3) can be

theoretically accounted for via the same analytical procedure adopted in (9).

At the postlexical level, the OCP generates further its pervassive pattern of dissimilation to ensure that it is obeyed. At this level, high vowels /i, ɪ/ and /u, ʊ/ forming hiatus across morpheme boundary also desyllabify to [j] and [w] respectively via glide formation (see similar patterns discussed in (3a-d) and (9)). Taken the first construction, ísí éwú 'goat head' in (4), it is claimed here that the apparent dissimilatory effect is strongly linked to the working of the OCP in (10) as follows:

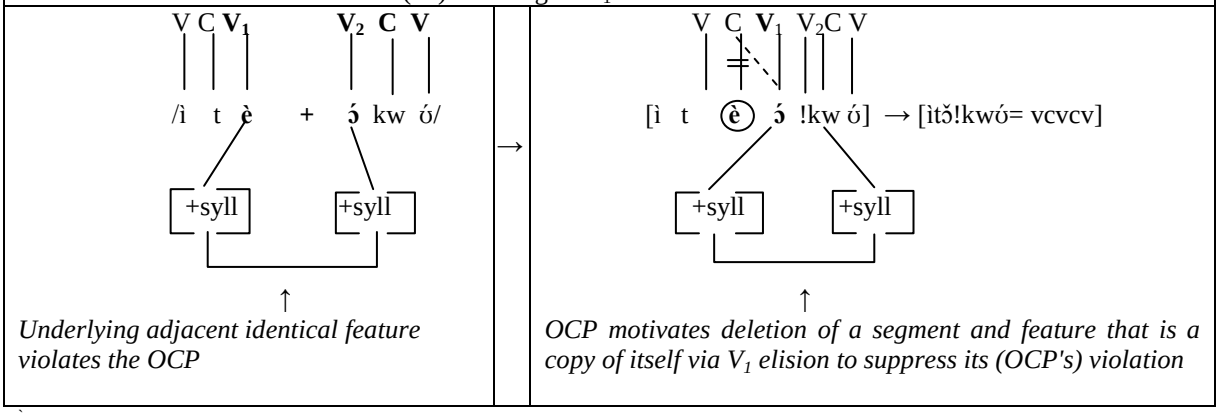
The dissimilatory effect ensures that the OCP statement in (1) is sanctioned, and is reflected in the privative opposition intrinsic in the feature [syllabic]. Here in (10), the otherwise adjacent identical feature sequence [+syllabic]-[+syllabic] at the feature tier is modified, yielding [-syllabic]-[+syllabic] sequence. Autosegmentally, the preference for an output distinct feature instituted by the OCP is captured by a dissimilatory delinking effect (see the '=' notation) which 'cuts off ' the V1 from the [j], precisely like that in (9).

The OCP-induced idea pursued here justifies the fact that, though in principle, Èwùlù seems to resolve hiatus based on constraint on preferred syllable structure, it is theoretically more plausible to implicate the OCP as the underlying constraint at work here, a fact explictly depicted by dissimilatory delinking effect which drives the rule of glide formation to resolve hiatus. More generally, however, both the syllabification and OCP constraints seem to interact with one another to ensure that the language maintains its preferred, unmarked CV syllable structure over the marked, lexical CVV syllable structure.

Further evidence in support of the OCP claim for the motivation of hiatus resolution strategies in Èwùlù is provided in (11), where, in a rather different fashion, the OCP induces the rule of /V1/-elision to avoid its violation. This alternative rule, like mentioned earlier, applies if V1 is specified with the feature [-high]. Analysis of this hiatus resolution strategy type is as follows, taking the first data, /ìtè + ɔ́kwɔ́/ 'hot pot', desscribed in (5) into consideration:

Vowel Elision as Hiatus Resolution Strategy

(11) Gliding of V_1 in Lexical Domain



As can be seen in (11) as well as the forms in (5), the OCP rather motivates the rule of vowel elision, precisely V1 elision. This is because the 'duplication' of elements occur at both the CV and feature tiers. The OCP thus resolves the repetition problem at these levels by deleting the V1 along with its underspecified feature which is obviously a copy of the one underspecified for V2. Autosegmentally, the pervasive pattern of deletion on V1, instigated by the OCP, is depicted by the ring notation 'O'. The notation signals the fact that the circled elements are deactivated from their respective tier, giving rise to the preferred output [V.CV.CV] syllable structure.

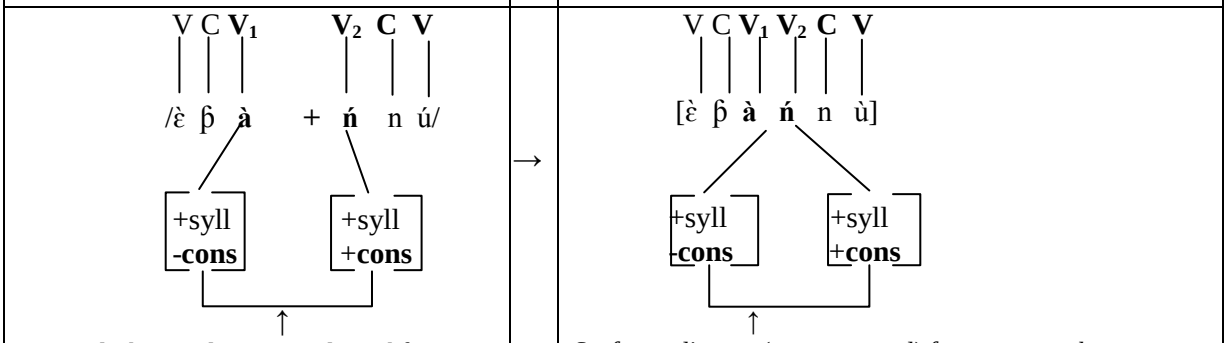
Taking the three cases in (9), (10) and (11) cumulatively, where input feature(s) is a copy of itself at the CV tier, the OCP simply alters the segmental tier by converting the melody (segment) to a semi-glide , since the glide is intrinsically a consonant and not necessarily a consonant at the CV tier. Or alternatively, the OCP deletes the first V-element, leaving only the second V-element intact. In the two cases, the unmarked output CV syllable structure is yet preserved.

Remarkbly, a different phonological scenario presents itself in (12), following the forms described in (6). Because the effect of the OCP follows directly from the statement in (1), the forms in (6), one of which is analysed in (12),

are absolutely exempt from the effect of the OCP. In the cases presented in (6), the OCP effect is completely inactive. This is because the elements across the boundary which are the target of hiatus resolution strategies appears not to be 'seen' by the OCP. In this domain no modifications occur. This observation reinforces the theoretical assumption posited in this current study, as presented in (12):

Suppresion of OCP effect in Partial Haitus Context

(12) Gliding of V_1 in Lexical Domain



Underlying adjacent unidential features

Surface adjacent (segments and) features are also unidentical. Hence OCP violation is suppressed/blocked

As correctly predicted, there is no clash neither is there any adjacency of identical features in both the input and output structures in (12), even though it appears so on the CV tier. Accordingly, the behaviour of the melody (syllabic) /n/ in Èwùlù allows it to have dual functions:

- it functions as a nasal consonant, and
- as a vowel (which is why it bears a tone).

The function in (a) accords /n/ the feature [+cons], and that in (b) accords it the feature [+syllabic]. The latter case is the reason /n/ is directly attached to the V2 node at the CV-tier. Thus with respect to the feature [+cons], the generalised copy of the feature "syllabic" adjacent to itself in (9) through (11) is ruled out. The featural dissimilatory effect in (12) therefore weakens the OCP effect to a point that if fails to glide or delete V1. Consequently, the input prosodic structure of the forms in (6) remains the same at the output level.

Optimality Theoretical Account

An examination of hiatus resolution strategies from an optimality perspective (Prince and Smolensky, 1993) is carried out in this section in order to succinctly throw more light on the OCP-triggered glide formation and deletion rules espoused in (9) through (11), and the demotivation of the rules in (12). The OCP resolution strategies are optimally accounted for following the contraints ranking between markedness and correspondence (faithfulness) constraints, where the markednes constraint, OCP ranks higher than correspondence constraint, MAX-IO, as demonstrated in (13) and (14):

(13)	**Tableau showing hiatus resolution strategy (V_1 deletion)**		
	/ì t è ɔ́ kw ó/ V_1 V_2	OCP	MAX-IO
	a. ì t è ɔ́ kw ó v_1 v_2	*!	
➡	b. ì t ɔ́!kw ó ø v_2		*!

(**Note:** *markedness contraint, OCP = adjacent identical elements are prohibited; correspondence/faithfulness constraint, MAX-IO = input segments must have output correspondents ('no deletion')*).

In (13), the form in (b.) is the optimal/winning candiate; it satisfies the higher ranked markedness contraint, OCP which the candidate in (a.) fatally violates. The ranking thus reflects this format: (OCP >> MAX-IO). This is so because the feature of V1 which underlyingly

overlaps with that of V2 with respect to the feature [syllabic] has been elided on the surface, thereby averting the occurrence of identical adjacent feature which otherwise violates the OCP.

Conversely, to capture the suppression of deletion rule (or glide formation as the case may be) constraints ranking in (13) will be reversed as in (14). Here MAX-IO ranks higher than the OCP, since the forms in (6) 'block' V1 deletion and are therefore not expected to behave like those in (5) captured theoretically in (11). Thus the OT analysis in (14) will look like this, following this ranking format: (MAX-IO >> OCP):

(14)	**Tableau showing suppression of hiatus resolution strategy in prenasalised context**		
	/è ɓ **à** **ń** n ú/ **V$_1$** **Ć**	MAX-IO	OCP
	a. è ɓ ø **ń** n ú ć	*!	
	b. è ɓ **à** **ń** n ú V$_1$ ć		

In (14), candidate (b.) is the most harmonic as it satisfies both MAX-IO and OCP; no deletion applies neither is there any occurrence of adjacent successive vowels which violates the OCP. Clearly, the melody /ń/ is a tone bearing syllabic element; it behaves typically like vowels (tone bearing units), which is why it attaches directly to V2 node at the CV-tier (see (12)). Phonologically, it is in principle a full fledge consonant. This explains why in (14) it links directly to /Ć/ and hence has the potentiality to block OCP-induced /V1/-deletion.

CONCLUSION

The objective of this paper was aimed at demonstrating the fact that hiatus resolution strategies in Èwùlù, such as glide formation and vowel elision, also found to be wide spread in many languages (including a wide range of Niger Congo, and precisely here, West Benue Congo (WBC) languages) are triggered by the Obligatory Contour Principle (OCP) which disallows adjacent identical elements (features) from occurring in a given phonological representation. Since two vowels in succession (in hiatus) are in principle adjacent identical elements, the current researcher argues that hiatus resolution strategies mentioned above operate in response to the effect of segmental OCP proposed by McCarthy (1986) advanced in (1) . To insightfully and transparently reinforce this claim, the theoretical assumptions of CV phonology and Feature theory were adopted. The OT account was also employed to optimally analyse the phenomena in order to strongly affirm the claim made in this work.

From the Èwùlù data used, it was found that, irrespective of the domain where hiatus occurs (lexically or postlexically), it was consistently resolved either by the alteration of the feature of V1 such as /i, ɪ/ and /u, ʊ/ to semi-glides [j] and [w] respectively or by deletion of non-high V1 such as /e, a, o, ɔ/, while preserving V2, a process that clearly suggests that Ewulu (unlike central Igbo) is a V1 only language. With the adoption of the Feature theory and CV phonology, it was possible to determine the fact that the rules of glide formation and vowel elision consistently apply in Èwùlù hiatus each time the feature(s) of V1 is a copy of the one specified for V2. Counterexamples were however drawn in (6) to reinfornce this claim, where adjacent unidentical features were shown to be resistant to the OCP effect. An OT account was introduced to optimally account for constraints interaction that triggers or militates against hiatus resolution strategies. The optimality account showed that the higher ranked markedness constraint, OCP dominates a low ranked faithfulness constraint, MAX-IO, a fact that accounts for the motivation of V1 gliding or deletion rules. The motivation for the suppression of the two rules were laid bare by providing counter-examples in (6) and analysed theoretically in (12) and (14). OT in this latter case showed that the blocking of both rules followed directly from faithfulness constraint, MAX-IO outranking markednes constraint, OCP.

More generally, the present paper is proposing that the rule that modifies or deletes the feature(s) of V1 in Èwùlù is largely driven by the strict constraint of the OCP. Significantly, even in a number of (Niger Congo) languages where V2 is sometimes subjected to such gliding or deletion process (e.g. central Igbo, Urhobo, Emai, Isoko, among many others), the

paper strongly suggests that constraints interaction between markedness and correpondence constraints account for hiatus resolution strategies: glide formation, V1/V2 deletion (or even coalescence assimilation) as pointed out in the literature. This fact is consistent with the OCP account (McCarthy, 1986; Yip, 1988) whereby languages under the influence of the OCP effect naturally delete one of two identical features in avoidance of violation of the OCP.

Note: *Èwùlù is one of the dialect clusters of Énúànì, a member of the Igbo group of languages, spoken in the northern part of Delta State, Nigeria.*

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