Nasal Assimilation Counterfeeding and Allomorphy in Haitian:

Nothing is still something!

Mohamed Lahrouchi and Shanti Ulfsbjorninn

Abstract

Haitian presents a case of optional regressive nasal assimilation: /fami/ [fãmi] 'family'. Vowels may optionally become nasal preceding a nasal consonant (VN). Curiously, this process systematically underapplies in the VN sequences corresponding to Vowel-Rhotic-Nasal sequences in French (VRN): [ʃãm] *chambre* 'room' vs. [ʃam] *charme* 'charm'. Haitian is also famous for its non-optimizing phonologically conditioned allomorph selection, handled in previous analyses as an anti-markedness effect (Klein 2003) or as a morphologically specified vocabulary insertion (Bonet, Lloret, and Mascaró 2007): [tɛ-a] 'the land' vs. [ʃat-la] 'the cat'. The Strict CV reanalysis of Haitian proposed here simplifies the phonological analysis of the language by eliminating both the counterfeeding and the allomorphy. In our analysis, etymological VRN and VR# have a different synchronic description; VRNs contain no underlying R, though VR#s do. Although VRNs have no underlying rhotic, they crucially do contain an empty CV. This empty syllable structure disrupts the locality between the nasal assimilation's trigger and its target, generating the counterfeeding: /ʃam/ = [ʃãm] 'room' vs. /ʃa^{CV}m/ = [ʃam] *[ʃãm] 'charm'. On this view, the counterfeeding receives exactly the same explanation as the blocking in words like /pal^{V}mis/ [palmis] *[pãlmis] 'palm tree'. This accounts for the counterfeeding. Turning to the allomorphy, only VR#s present synchronic R-zero alternations: [tɛ] 'land' vs. [ãteʁe] 'to bury'. This synchronic alternation is explained as a contextual phonological condition

on R (it must be prevocalic) and the underlying shape of the definite article (it begins with a floating consonant). The interplay between these factors generates the surface phenomenon without any allomorphy at all. Instead, it proposes a phonological solution for the surface variation in articles based on a single underlying form (see Nikiema 1999).

Keywords: Haitian, nasalization, r-deletion, opacity, allomorphy, Strict CV.

Haitian (often referred to as Haitian Creole) is mainly spoken in the Republic of Haiti, on the Caribbean island of Hispaniola. Over 90% of its lexicon is cognate with Modern Standard French (French). Nevertheless, Haitian and French are not mutually intelligible.

Haitian has a phonemic nasal vowel contrast: [bãk] 'bank' vs. [bak] 'tub'. Additionally, Haitian has also developed an optional process of regressive nasalization whereby an oral vowel is nasalized when immediately followed by a nasal consonant, in intervocalic (e.g. /zami/ ➝ [zãmi] 'friend') or coda position (e.g. /lam/ ➝ [lãm] 'blade').

Interestingly, this process seems to interact with another process that has occurred in the history of Haitian whereby coda /r/ present in the French input was deleted (see Bhatt and Nikiema 2006, Cadely 2002, Tinelli 1974, 1981, Valdman 1978, among others). Regressive nasalization occurs optionally in almost all VN sequences but not if these correspond with the VRN sequences in French. This interaction creates contrasts such as [ʃãm] 'room' vs. [ʃam] 'charm' (from French *chambre* [ʃãbʁ] and *charme* [ʃaʁm], respectively); however, these are not contrastive minimal pairs in Haitian because the process of regressive nasalization is optional.[1] If the absence of coda /r/ in Haitian is the

result of a synchronic process of deletion, then the pattern is a case of counterfeeding opacity. For the sake of the argument, the /r/ is treated as if it is underlying in (1), and hence subject to a deletion process.

(1)   R-deletion and optional regressive nasalization

Input	/ʃam/	/ʃarm/
Nasal Harmony	ʃãm	--
R-deletion	--	ʃam
Output	[ʃãm]	[ʃam]
	'room'	'charm'

The next section will present the basic facts of Haitian phonology including details of its nasalization, its rhoticity and its definite article alternation. Section 2 will discuss previous analyses of the distribution of R in Haitian, in relation with regressive nasal assimilation (morpheme-internal R) and the definite article alternation (morpheme-final R). Sections 3 and 4 will present our alternative analysis of the synchronic distribution of R in Haitian. They will also introduce the theoretical machinery required to understand the analysis. Unlike Nikiema and Bhatt (2005), we will propose that R has been entirely lost in VRC contexts, while it has been retained as floating in VR# sequences. Our alternative account for the counterfeeding in VRN sequences is based on lexically specified empty syllabic structure corresponding to the old R of VRN sequences; since these surface phonetically as VN sequences they give the appearance of counterfeeding nasal

assimilation. Section 5 will turn to the definite article alternation. This phenomenon, which has been traditionally difficult to solve, will receive a unified analysis, based in part on Nikiema (1999), where all of the variants are derived from a single underlying form whose initial consonant is floating. Any recourse to phonologically conditioned allomorphy (Embick 2015:175), non-optimizing phonology (Klein 2003) or any other morphologically specified vocabulary insertion (Bonet, Lloret, and Mascaró 2007) becomes unnecessary. Crucially, the proposed analysis allows accounting for the behavior of both stem-final R and the definite article's initial consonant by distinguishing two types of empty onset slots: "pointed" and "pointless". Depending on the lateral relations, floating consonants can either be realized or not, leading to forms such as: [tɛ] 'land' / [ãtere] 'to bury' / [tɛ.a] 'the land', the latter of which involves a highly marked hiatus sequence. The analysis furthermore allows solving contradicting aspects of Nikiema's (1999) and Nikiema and Bhatt's (2005) analyses when assessed together, namely the floating status of the definite article's consonant, as opposed to the diphthong structure of VR sequences.

1 Background data: rhoticity, nasal assimilation and definite article alternation

This section provides the empirical basis for the facts briefly introduced above. Before presenting the relevant data for the distribution of R in relation to nasal assimilation, we outline the behavior of French word-final clusters in Haitian and the distribution of mid-vowels.

1.1 Word-final clusters and mid-vowel distributions

Like many varieties of Modern Colloquial French[2], Haitian has no word-final rising-sonority clusters (see Nikiema 1999, and Bhatt and Nikiema 2006) (2a-c), though it does allow certain falling sonority clusters (2f,g).

(2)   Final Consonant Clusters

	Orthography	*French*	*Haitian*	*Gloss*
a.	*livre*	[liv]	[liv]	'book'
b.	*maigre*	[mɛg]	[mɛg]	'thin'
c.	*table*	[tab]	[tab]	'table'
d.	*dentiste*	[dãtist]	[dãtis]	'dentist'
e.	*direct*	[diʁɛkt]	[diʁɛk]	'direct'
f.	*calme*	[kalm]	[kalm]	'calm'
g.	*culte*	[kylt]	[kilt]	'cults'

Unlike Modern Standard French (henceforth simply referred to as French), Haitian has no front rounded vowels. Moreover, unlike French, Haitian has seven contrastive vowels in open syllables: [i, e, ɛ, a, ɔ, o, u]. This is because Haitian manifests only a part of the *loi de position*, the rule that regulates the distribution of French mid-vowels (see Martinet 1945, Morin 1986, Tranel 1987, and Storme 2017).

In French, the *loi de position* reflects a general tendency for close-mid vowels not to occur before heterosyllabic consonant clusters or before word-final consonants ('closed syllables'), while open-mid vowels may be found in these positions.[3] Haitian maintains this restriction on close-mid vowels; they cannot occur in closed syllables. However, Haitian does allow open-mid vowels in all positions.

(3)   Freely distributed open-mid vowels

    a.   [bɔkɔ]   'witch-doctor'

    b.   [bɛbɛ]   'mute'

    c.   [bɛgwɛ]   'fool'

    d.   [mɛg]   'thin'   cf. [mɛ.gʀi]   'to become thin'

    e.   [kɔf]   'box'   cf. [kɔ.fʀe]   'to crush someone'

Note in particular the last two forms. The open-mid vowels of their stems [mɛgʀi] 'thin' and [kɔfʀe] 'box' do not become close-mid vowels, even though they sit in open syllables (see Nikiema and Bhatt 2005:47). It is worth mentioning before turning to nasality that the quality of the mid vowels in open syllables may freely vary from close to open: [bɔkɔ] may also be pronounced as [bokɔ], comparable to French *bêtise* 'foolishness', which varies from [bɛtiz] to [betiz].

1.2   Nasality in Haitian

French oral vowels are nasalized when preceding a nasal coda consonant, which subsequently undergoes elision (4a-e). They resist nasalization when the vowel-nasal sequence is followed either by a full vowel or by schwa before its deletion (4f-h). (see Nyrop 1902:80, Bourciez and Bourciez 1967:42, Dell 1973:192, Rheinfelder 1976, and Morin 1994).

(4)   Nasal vowels in French

		Orthography	Environment	Gloss
a.	[fɛ̃]	*fin*	VN#	'thin'
b.	[plã]	*plan*	VN#	'plan'
c.	[vãtχ]	*ventre*	VN.C	'belly'
d.	[pɛ̃tyʁ]	*peinture*	VN.C	'paint'
e.	[kɔ̃tã]	*content*	VN.C	'happy'
f.	[fin]	*fine*	VNV#	'thin.FM'
g.	[bʁunatχ]	*brunâtre*	VNV	'brownish'
h.	[planifje]	*planifier*	VNV	'to plan'

Haitian has underlying nasal vowels that are cognate to those of French.

(5)   Nasal correspondences

	French	Orthography	Haitian	
a. Ṽ#				
	[ʒaʁdɛ̃]	*jardin*	[ʒadɛ̃]	'garden'
	[gaʁsɔ̃]	*garçon*	[gasɔ̃]	'boy/waiter'
	[aʁʒã]	*argent*	[laʒã]	'money'
b. ṼC_{voiceless obstruent}				
	[bãk]	*banque*	[bãk]	'bank'
	[plãt]	*plante*	[plãt]	'plant'
	[dãs]	*dance*	[dãs]	'dance'

c. ṼC_{voiced obstruent}

[ʒãb]	*jambe*	[ʒãm]	'leg'
[ʃãb]	*chambre*	[ʃãm]	'room'
[mɔ̃d]	monde	[mɔ̃n]	'world'

In addition to these permanently nasal vowels, Haitian also has an optional process of regressive nasalization, whereby the vowel in any vowel–nasal (VN) sequence may become nasalized, as shown in (6) beneath.[4]

(6)   Optional regressive vowel nasalization

	UR	Optional outputs			
a.	/fami/	[fami]	or	[fãmi]	'family'
b.	/amu/	[amu]	or	[ãmu]	'love'
c.	/kana/	[kana]	or	[kãna]	'duck'
d.	/len/	[lɛn]	or	[lɛ̃n]	'wool'

This rule is widely taken to be synchronically productive (see d'Ans 1968, Tinelli 1974, 1981, Valdman 1978, Nikiema and Bhatt 2005, among others).[5]

In addition to this being the prevailing opinion in the literature, there is also specific evidence that regressive nasal assimilation is a synchronic productive rule in Haitian. Take this list of recent English and Spanish loanwords in (7), which we have extracted from Govain (2014).

(7) English and Spanish loanwords in Haitian

    a.   *English*   *Haitian*

English	Haitian
honey	hãni
canister	kãnistɛ
moneygram	mãnigram
pitch pine	piʃpɛ̃
time is money	tamizmãni
shoeshiner	ʃuʃãj

    b.   *Spanish*   *Haitian*

Spanish	Haitian	
aquino	akɛ̃	'not here'
bueno	bwɛ̃n	'well'
canica	kãnik	'marble'
canoa	kãnɔt	'canoe'
coño	kɔ̃jɔ̃	'shit, twat'
lumia	limɛ̃na	'prostitute'
hamaca	rãmak	'hammock'

The vowels in these items do not have (even) phonetic nasalization in either English or Spanish (see Martínez-Celdrán, Fernández-Planas, and Carrera-Sabaté 2003). Nevertheless, they are adapted as nasal vowels in Haitian. In the many cases where this happens, it must be due to the Haitian phonology encoding this specific tendency, which is as neutral way as possible for saying that regressive vowel nasalization is grammatically specific to Haitian.

This stands in contrast with French, which also has nasal vowels, but crucially also has very different phonological rules of nasalization. Correspondingly, nasalization would never proceed as shown in (7a-b) in the French adaptation of English/Spanish loanwords. Therefore, we can be quite sure that the regressive nasalization of these tokens is emerging as a consequence of Haitian's synchronic grammatical conditions on nasalization.

As is quite typical of loanwords, there are exceptions, some VN targets do not allow regressive nasalization: [ameʀika] *[ãmeʀika] 'America' and [sinema] *[sĩnẽma] 'cinema'. These indeed point to there being some additional factors in the adaptation of nasalization in loanwords into Haitian. However, whatever they are they are additional to and not contradicting the need for a grammatical tendency for regressive nasal assimilation.

In fact, loanwords provide an additional argument for the synchronicity of these patterns. For instance, that modern loanwords taken from American English (which is rhotic), are systematically never regressively nasalized, even though the coda R has been deleted and VRN has been turned into a synchronic VN sequence: e.g. [fɔmãn] 'fo**re**man', [kɔnɛ] 'co**r**ner', and [bamãn] 'ba**r**man'.

The lack of regressive nasalization in these forms cannot be explained by claiming that the optional regressive nasalization rule is no longer active in Haitian, nor that VRN sequences in English do not have phonetic nasalization. Firstly, these loans are not younger or older than the list above that do have regressive nasalization. Secondly, as we have seen, Haitian *does* nasalize many English (and Spanish) VN sequences, even if they do *not* have any phonetic nasalization.

Where, however, there is a perceived disruption of locality, such as VRN, even if the

R does not survive the loanword adaptation, it seems that Haitian speakers ascribe it the structure where V and N are not locally adjacent, which in other Caribbean Creoles has led instead to compensatory lengthening such as in French Guadeloupe and Reunion Creoles: for example, Guadeloupe [kɔːn] 'horn', [ʔaːm] 'weapon', [mɔːn] 'gloomy, dreary' (see Nikiema and Bhatt 2005:61).

Clearly not every single potential target for regressive nasalization is lexicalized this way. However, what is clear is that Haitian has a specific and enduring bias to nasalize VN sequences and an interesting counterfeeding relationship where VN sequences are created via R-deletion.

Taken together, these facts perfectly make the case that there are two possible structures that speakers are mapping V(R)N sequences to. There is a VN structure, with nasalization, and a structure where V and N are not adjacent and where nasalization is impossible, just as it is for any other VCN: kalm *kãlm. We will claim that any VN exceptions of this type have this structure.

This pattern of loanword adaption, and its comparisons to French for example, need to be accounted for by anyone who does not believe in the synchronicity of regressive nasalization in Haitian (as an optional rule or bias in the grammar).

1.3   Rhoticity in Haitian

The Haitian rhotic is generally transcribed as a voiced velar fricative [ɣ] (see Delattre 1959, Johnson and Alphonse-Férère 1972, Tinelli 1981, Cadely 1988, 2003, and Storme 2018), and sometimes as a trill [ʀ] or as a velar approximant that has "almost no air turbulence" according to Tinelli 1970:63 (see also Cadely 1988:135). It also surfaces as [w] when

followed by a rounded vowel: for example, [kɔ̃twɔl] 'control', [wɔ̃] 'round'.[6] We will use [ʀ] to represent the various phonetic realizations of the rhotic consonant in Haitian, while retaining /r/ in underlying forms.

Rhoticity in Haitian is asymmetrically distributed. This segment has only been retained pre-vocalically, never in word-final position nor between a vowel and a consonant (Nikiema and Bhatt 2005).

(8) Distribution of rhotics in Haitian

French	Haitian	Gloss
a. #RV	#RV	
[ʁa]	[ʀat]	'rat'
[ʁoti]	[gʀije]	'roasted'
b. VRV	VRV	
[veʁite]	[veʀite]	'truth'
[teɔʁi]	[tewoʀi]	'theory'
c. VR#	V#	
[mɔʁ]	[mɔ]	'death'
[klɛʁ]	[klɛ]	'light/clear'
d. VRC	VC	
[maʁtiʁ]	[mati]	'martyr'
[ʃaʁnɛl]	[ʃanɛl]	'carnal, fleshy'
e. VRN	VN	

[fɔʁm]   [fɔm]   'form'

[bɔʁn]   [bɔn]   'landmark'

Unlike in word-internal position, word-final R appears in many morphologically related forms that display a vowel-initial suffix.

(9) Stem-final R in morphologically related forms (Nikiema and Bhatt 2005:47)

French	Haitian		Derived form	
[bœʁ]	[bɛ]	'butter'	[beʁe]	'to butter'
[fɛʁ]	[fɛ]	'iron'	[feʁe]	'to shoe (horse)'
[tɛʁ]	[tɛ]	'earth'	[ãteʁe]	'to burry'
[mɛgʁ]	[mɛg]	'thin'	[megʁi]	'to slim'
[sykχ]	[sik]	'sugar'	[sikʁe]	'to sweeten'
[klɛʁ]	[klɛ]	'clear'	[ekleʁe]	'to lighten'
[flœʁ]	[flɛ]	'flower'	[fleʁi]	'to bloom'
[məzyʁ]	[mezi]	'measure'	[meziʁe]	'to measure'
[tʁezɔʁ]	[tʁezɔ]	'treasure'	[tʁezɔʁje]	'treasurer, paymaster'

This difference between stem-internal and stem-final R is of paramount importance for the representational analysis that will be proposed in sections 3 and 4.

1.4   Interaction between rhotics and nasalization

The lack of R in VRN sequences resulted in many more VN# sequences in Haitian than there are in French. However, as mentioned in the introduction, these VN sequences systematically fail to undergo the optional regressive vowel nasalization (see d'Ans 1968, Valdman 1978, Cadely 2002, Nikiema and Bhatt 2005).

(10) VN fails to nasalize iff it corresponds to VRN in French

	French	Haitian		Gloss
a.	[kɔʁn]	[kɔn]	*[kɔ̃n]	'horn'
b.	[fɛʁme]	[fɛmẽ]	*[fɛ̃mẽ]	'closed'
c.	[fɔʁm]	[fɔm]	*[fɔ̃m]	'form'
d.	[aʁmwaʁ]	[amwa]	*[ãmwa]	'armoury'

This lack of nasalization in some VN sequences but not others is a case of counterfeeding, previously summarized in (1) and repeated for the sake of convenience in (11).

The underapplication of nasalization ought to be highly unexpected because the historical loss of R comes from the restructuring of Haitian in the 18th century (see Valdman 2015:170, and Storme 2018), while vowel nasalization is an optional and productive process (see Valdman 1991:17; Cadely 2002:447, Tinelli 1974:346, and Govain 2014). Therefore, counterfactually, VN formation resulting from R deletion should always feed vowel nasalization.

(11) R-deletion counterfeeding

	Input	/ʃam/	/ʃarm/
	Nasal Harmony	ʃãm	--
	R-deletion	--	ʃam
	Output	[ʃãm]	[ʃam]
		'room'	'charm'

On the face of it, this counterfeeding analysis captures the natural intuition of the data, that an instance of R is somehow blocking regressive nasalization before being deleted. But is there any reason to suppose that this opaque analysis is synchronically correct? Is it even justifiable to posit an underlying R in these VRN forms, where the rhoticity is never available to the learner? This has been proposed, but we do not find it necessary to stipulate. Before addressing this issue, we discuss the definite article with specific attention to its contextual variants.

1.5   Definite article alternation

1.5.1   Variants of the definite article

Unlike French, the definite determiner is an enclitic in Haitian, while segments that correspond to the French definite determiner proclitics are frequently lexical parts of Haitian stems: for example, [**n**ãm] *une âme* 'soul', [**z**ɛb] *les herbes* 'grass', [**l**ãme] *l'armée* 'army'.

The definite article seems to be subject to what is standardly taken to be non-optimizing phonologically conditioned allomorph selection, especially since a consonant-

initial allomorph is selected after consonant-final stems resulting in consonant clusters, and a vowel-initial allomorph is selected after vowel-final stems creating hiatuses (Bonet, Lloret, and Mascaró 2007).

The enclitic has five contextually predictable surface variants (see Klein 2003, Paster 2006, Bonet, Lloret and Mascaró 2007, Bye 2008, and Embick 2010).

(12)   Definite enclitic alternation

    a.   -la   After an oral consonant preceded by an oral vowel

        ʃat-la   'the cat'

        dãtis-la   'the dentist'

        liv-la   'the book'

        lɛt-la   'the letter'

    b.   -lã   After an oral consonant preceded by a nasal vowel

        bãk-lã   'the bank'

        plãt-lã   'the plant'

        dãs-lã   'the dance'

    c.   -nã   After a nasal consonant preceded by a nasal vowel

        ʃãm-nã   'the room'

        madãm-nã   'the lady'

        ʒãm-nã   'the leg'

    d.   -a   After an oral vowel

lapli-a   'the rain'

ne-a   'the nose'

ʒenu-a   'the knee'

e.   -ã   After a nasal vowel

ʒadã-ã   'the garden'

kuzã-ã   'the cousin'

ʃebɔ̃-ã   'the coal'

gasɔ̃-ã   'the boy'

Furthermore, there is a process of gliding that affects forms like in (12d). Vowel-final stems ending in non-low vowels undergo glide insertion, according to Valdman (1978:75) and Klein (2003): for example, [lapli-ja] 'the rain', [bato-wa] 'the boat', [tu-wa] 'the hole' vs. [papa-a] 'the father'.[7] Table (13) lists the variants of the definite article along with their contexts of appearance.

(13)   Environments and variants

Stem-final position	VC#	ṼC#	ṼN#	V#	Ṽ#
Variants	-la	-lã	-nã	-a	-ã

1.5.2   Interaction with final R

As pointed out in the previous section, the distribution of the variants of the definite article depends on the nature of the stem's final segment. Putting aside nasal assimilation, the vocalic variant of the definite article appears after a stem-final vowel while the consonant-

initial variant follows a stem-final consonant. These matters of fact have led several scholars to promote non-optimizing phonology and anti-markedness analyses, the most significant of which will be discussed in section 2.3.

Of particular interest to our immediate purpose is stem-final R, which never interacts with the definite article. All stems whose final R alternates with zero curiously select the vocalic variant of the definite article, therefore behaving like vowel-final stems of the type in (12d). Examples are given below.

(14) Definite article in stem-final VR

French	*Haitian*	*N + def. article*	
tɛʁ	tɛ	tɛ-a	'the earth'
fɛʁ	fɛ	fɛ-a	'the iron'
gɛʁ	lagɛ	lagɛ-a	'the war'
bœʁ	bɛ	bɛ-a	'the butter'
sœʁ	sɛ	sɛ-a	'the sister'
tʁezɔʁ	tʁezɔ	tʁezɔ-a	'the treasure'
məzyʁ	mezi	mezi-a	'the measurement'
flœʁ	flɛ	flɛ-a	'the flower'

Before addressing these phenomena from a representational perspective where stem-final R and the definite article's initial consonant are analyzed as floating consonants, whose realization entails a distinction in the status of their skeletal slots (see sections 3 to 5), we discuss earlier analyses, with particular attention to those advocated by Nikiema 1999, and Nikiema and Bhatt 2005.

2   Previous analyses of R and the definite article

2.1   *Synchronic distribution and analysis of R*

2.1.1   *R in morpheme-final position*

As stated in section 1.3, there are cases where R alternates with zero. Here it is epistemologically coherent to propose that the roots with alternations synchronically contain underlying R. These all correspond with French VR# sequences, such as in [gitaʁ] 'guitar', [flœʁ] 'flower', and [tɛʁ] 'earth'. In Haitian, these words are realized as [gita], [flɛ] and [tɛ]. They alternate with [gitaʀis] 'guitarist', [fleʀi] 'to bloom', [ã-teʀ-e] 'to bury' and [de-teʀ-e] 'to unearth', respectively (further examples in (9)).[8]

In derivations such as in (15), one has to assume that R is part of the root's underlying form. If it were not, the output would be *[detɛ.e].

(15)   Derivation from [de-te(ʀ)-e]
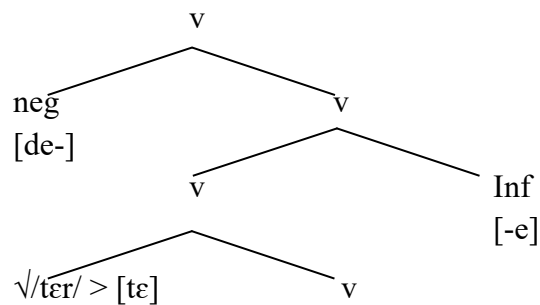
Moreover, an analysis of epenthetic R-insertion in these forms would incorrectly insert the rhotic in all forms where French has a hiatus context, including verbs like *cré-er* 'to create' and *pli-er* 'to fold', which should have led in Haitian to *[kʀe-ʀ-e] and *[pli-ʀ-e] instead of attested [kʀeje] and [plije].

2.1.2 R in morpheme-internal position

Nikiema and Bhatt 2005 go further however, and propose that R is synchronically retained in other contexts too. Specifically, in VRN sequences where the surfacing of R is never attested. Learners are supposed to infer its presence by the fact that it blocks nasalization.

When it comes to the syllabic position of R in a VRN sequence the default assumption is that R sits in the coda position. However, based on their analysis of Haitian's definite article alternation they argue that underlying R is located in the syllable nucleus. Amongst other conditions, the alternation is principally sensitive to whether the stem ends in a consonant or a vowel. This means that the alternation can inform on whether a stem's VR# sequence has the R in a coda position.

Nikiema and Bhatt 2005 reason that if the R of VR# is an underlying final consonant, VR# stems like [tɛ] 'earth', [flɛ] 'flower' and [mizɛ] 'misery, poverty' are C-final and so they should be paired with the consonantal variant of the definite article: [-la]. Conversely, if VR# stems are paired with [-a], VR# must be V-final. They take the behavior of this kind of forms to mean that Haitian R is located within the nucleus (even though it is inaudible). In this way, VR# stems can alternate with [ʀ] (under certain conditions), while appearing vowel-final in other contexts.

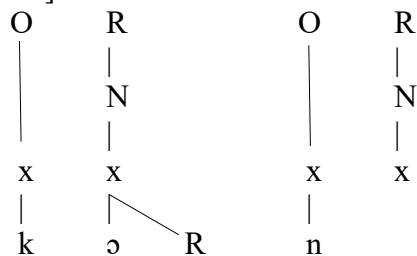(16) R-nucleus analysis (Nikiema and Bhatt 2005:49)

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      O     R
     /\     |
    /  \    N
   /    \   |
  x   x   x
  |   |   /\
  f   l  ɛ  R
```
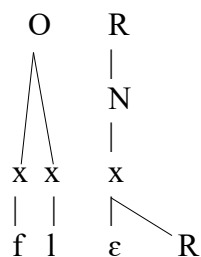
When followed by a vocalic suffix, such as –e or -i, the diphthong structure is "unpacked" and its underlying R syllabified in the onset position of the following syllable, leading to the form *fleʀi* 'to bloom'.[9]

Then, the authors assume, seemingly based on the "etymon", that R should be located in nuclei for which there is no evidence of [ʀ]-zero alternation (see (17)).
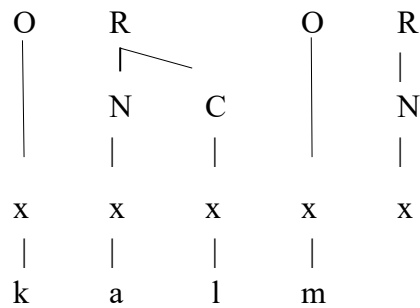
Nikiema and Bhatt's (2005) solution to the definite article allomorphy in fact creates a problem for regressive nasal assimilation because, according to their analysis, VRN sequences like [kɔn] *corn* 'horn' have a vowel directly preceding the nasal consonant. Thus, they would have the same syllable structure as VN words like [fãmi] 'family'.

This means that Nikiema and Bhatt 2005 cannot use a syllable structure difference to account for VRN behaving differently from VN. For instance, under this account [kɔn] *corn* 'horn' cannot resist nasalization for the same reason as [kalm] *[kãlm] 'calm' and [palmis] *[pãlmis] 'palm tree'[10]; unlike the open syllables such as [fãmi] (17 vs. 18 and 19).
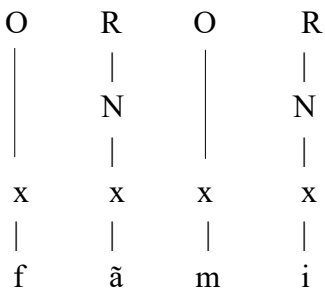
(17) [kɔn] / *[kɔ̃n] *corne* 'horn'

(18) [kalm] / *[kãlm] *calme* 'calm'

```
   O     R           O     R
   |    ⌐‾‾‾\         |     |
   |    N    C        |     N
   |    |    |        |     |
   x    x    x        x     x
   |    |    |        |
   k    a    l        m
```

(19) [fãmi] 'family'

```
   O     R     O     R
   |     |     |     |
   |     N     |     N
   |     |     |     |
   x     x     x     x
   |     |     |     |
   f     ã     m     i
```

Instead of a syllable structure solution, Nikiema and Bhatt need to exploit a featural difference between the nuclei that undergo nasalization and those that do not. Specifically, they suggest the following condition.

(20)   "[…] the presence of /R/ within the nucleus blocks spreading of the nasal feature onto vowel." (Nikiema and Bhatt 2005:58)

Nikiema and Bhatt 2005 account for the correct outcomes but at the expense of a disjunctive analysis, in which two distinct mechanisms are required in order to explain the blocking of nasal spread in VRN as opposed to VCN sequences. In the following subsections, we will highlight further issues with their analysis, ultimately showing that there is no reason why an R should be posited in the underlying representation of forms like [kɔn] 'horn' and [ʃam] 'charm'.

2.2   Problems with the nuclear R analysis

2.2.1   No phonetic interpretation of R

Nikiema and Bhatt's (2005) rhotic segment in VR nuclei has no interpretative effect in the surface form, as opposed to prevocalic position where it is pronounced.

The authors suggest that the nuclear R is not interpreted because it has no temporal position (Nikiema and Bhatt 2005:56). The reader is referred to the structure in (17), where R is linked to a nuclear skeletal slot.

Their assumption that VR may instantiate a single position while its second component is left unpronounced relies entirely on their need to explain the non-adjacency of V and N at the phonological level, and hence their failure to undergo nasal assimilation. To the best of our knowledge, this type of monopositional diphthong is not only cross-linguistically unattested, but it also goes against the facts which the authors presented from other French lexifier Creoles (see Nikiema and Bhatt 2005:60). According to them, Saint-Lucie and Guadeloupe Creoles lost the French etymological R in post-vocalic position (e.g. [nɛːf] 'nerve', [pɔːt] 'door', [kɔːn] 'horn'), causing compensatory lengthening of the preceding vowel, which standard phonological analyses would formalize as a spreading operation onto the empty temporal position. Would Haitian be a unique case where the loss of R, along with its temporal position, evolved into a monopositional diphthong, which is not realized as such in the surface form?

Furthermore, one wonders how could this rhotic diphthong be learnable since it is never available at the surface form. Why would child learners infer the presence of R in VRN sequences purely from their lack of nasal assimilation? The diphthong solution looks

more specific than the evidence for it available to the learner (unlike the VR# context: e.g., [flɛ] 'flower' / [fleʀi] 'to bloom')).

2.2.2   *The genre-gap does not need a nuclear-R explanation*

Nikiema and Bhatt's (2005) analysis predicts that a nasal vowel can never be followed by R, either before a consonant or at the end of the word: *bãr, *bãrte. This prediction follows from the fact that both the nasal feature and the R would have to share a nucleus with the preceding vowel, which their analysis successfully excludes. With their acknowledged single counterexample (the word: *genre* [ʒãr] 'genre') the prediction appears to hold. It can be referred to as the *genre-gap*.

The problem with this as a successful prediction of their model is that the exact same fact holds for French, where demonstrably the R is not within the nucleus, since it is pronounced. In their analysis, any R of VR diphthongs can be realized only when it is unpacked and attached to an onset position; otherwise it remains silent.

Since R is not in the nucleus in French and yet there is a genre-gap, the lack of genre words in Haitian cannot be a product of Nikiema and Bhatt's rhotic diphthong analysis.

2.2.3 *Synchronic underlying R*

In view of the facts just discussed, it is virtually impossible to synchronically assume that historical VRN sequences contain an underlying R, because the only evidence for it would come from the etymon and orthographic sources. Language acquisition is completed pre-literacy in any case, but in Haiti an etymological and orthographical solution is particularly implausible given that the total literacy rate in Haiti was 48.7% (UNICEF 2012). Though

it is true that optional productive regressive nasalization is blocked in VRN sequences, we will ascribe this fact a representational interpretation. We do not see any evidence for there being an underlying rhotic segment, much less the highly marked rhotic diphthong. Before presenting our analysis, we discuss previous accounts for the definite article alternation.

2.3   *Allomorphy and markedness*

As we have seen in section 1.5, the definite article displays five contextual variants, all of which depend on the nature of the stem's final segment. Nikiema 1999 offers an analysis where these variants are derived phonologically from a single underlying form. In section 5, we will propose a related analysis but which uses the tools of Strict CV phonology.

Crucially, almost all other analyses of Haitian suppose that the variants in definite article come from the insertion of two allomorphs (different underlying forms for the same morpheme), usually /la/ and /a/. This is because while the process is clearly phonologically conditioned it is non-optimizing.

(21)   Phonologically Conditioned Allomorphy (based on Carstairs 1988)

The contextual factor that triggers allomorphy is the phonological representation.

Haitian is then taken as an interesting case of non-optimizing phonologically conditioned allomorphy, summarized in Embick (2010:91, and 2015:175) as follows.

(22)   Haitian

allomorph   context

la   /C_

a   /V_

This particular pattern is non-optimizing because the consonant-initial allomorph /la/ is selected to appear after consonant-final stems creating codas that are cross-linguistically marked, and the vowel-initial allomorph /a/ is selected after vowel-final stems creating hiatus sequences that are highly marked cross-linguistically (see Bonet, Lloret, and Mascaró 2007).

Even if it is the case that in most forms gliding ends up repairing these marked hiatuses: /bato + a/ → bato-**w**a 'the boat' (see Cadely 2002, Nikiema 1999, and Valdman 1978), the key observation remains that there would have been a supposedly available allomorph /la/, which would have optimized the output *[bato-la] and yet it is not selected. Instead, the vowel-initial allomorph is selected (against general markedness) and optimized with gliding.

Klein 2003 analyzed this as an anti-markedness effect, that is, there are two input allomorphs /la/ and /a/ and the former is lexically marked with a 'desideratum' to follow a consonant-final stem. Klein's analysis necessitates positing underlying forms that also carry instructions about the specific constraints they require the computation to violate. The underlying form or lexical representation of the /la/ allomorph is shown beneath.

(23)   Lexical representation of /la/ (Klein 2003:219)

/la/

Stem-Final-NoCoda
*

As well as specifying its underlying segments /la/, the lexical representation is also marked for ensuring that *Stem-Final-NoCoda* (the constraint penalizing stems ending in codas) is violated.

This is an analysis that we think can be safely repudiated, if only because Bonet, Lloret, and Mascaró's (2007) solution (which is also an allomorphic /la, a/ competition) has since superseded it.

Bonet, Lloret, and Mascaró's (2007) analysis relies on positing two allomorphs /la/ and /a/. Following Mascaró (2007), they propose that these allomorphs are lexically 'ordered' with /a/ preferred over /la/ (a>la). According to this analysis, candidates with /la/ will incur violations of the constraint PRIORITY, so all things being equal, candidates with /a/ will be preferred over those with /la/.

The phonological sensitivity of the morphology-phonology interaction comes from the fact that PRIORITY is considered by the grammar to be more important than *Onset* (the constraint that penalizes onsetless syllables), but less important than *C.V* (a syllable contact constraint that penalizes a consonant-final syllable adjacent to vowel-initial one).

Therefore, the grammar will favor a form that uses the /a/ allomorph, even if it is at the expense of creating a hiatus: *pap**a.a*** 'the father'. At the same time, the grammar will disfavor any candidates with effective resyllabification using the constraint R-Align: /liv + a/ → *li.va / *liv-la* 'the book'. R-Align is predicated on the condition that the right edge of stems should coincide with the right edge of syllables: *liv.]a *vs*. liv].la 'the book'.[11]

The PRIORITY analysis suffers from a number of problems. Chiefly, it has to posit two exponents for the same morpheme. This analysis will therefore always be less parsimonious than a viable analysis with a single exponent. The standard analysis already uses mechanisms to generate different surface forms of the exponent based on a single underlying form. What we will show is that this is possible in all cases.

Another problem with PRIORITY is that it introduces a very different kind of constraint into OT. PRIORITY is not an ordinary faithfulness constraint nor an ordinary markedness constraint. It is a wholly different kind of constraint. This complicates the linguistic architecture/phonological component since each type of constraint will have its cognitive underpinning and its own evolutionary origin. A chief concern of the Minimalist Program (see Chomsky 1995) is the plausibility of its proposed innate mechanisms, each proposed innate aspect comes at a high cost in terms of plausibility and consequently it has to be as simple as possible (see Berwick and Chomsky 2016). Therefore, positing PRIORITY, a whole new type of constraint, seriously adds to the burden of evolvability, and any system without this "third" type of constraint will be considerably more parsimonious than one with it.

Furthermore, PRIORITY seems to be anti-modular since it mixes phonological and morphological information. Although there are many other such examples of phonologically conditioned allomorph selection (see Carstairs 1988, 1990, Paster 2006, and Embick 2010), there have been recent moves to reduce examples of allomorph *selection* with strictly phonological derivations which produce the surface variants from a single underlying form (see Pak 2016, Scheer 2016, Barillot, Bendjaballah, and Lampitelli 2018, Faust, Lampitelli, and Ulfsbjorninn 2018, and Ulfsbjorninn 2020).

Generally speaking, in all instances of phonological alternations a purely phonological analysis with one single underlier is preferable over any allomorphic analysis, which posits more than one underlying form. Following the same trend, we propose a

phonological solution for the definite article's alternation, based in part on Nikiema (1999), where all of the variants are derived from a single form whose initial consonant is floating.

3 A Strict CV reanalysis of the counterfeeding

In this section, we present an alternative to the underlying R hypothesis in VRN sequences. We show how Strict CV, an offshoot of Government Phonology, allows us to capture the structural difference between VRN and VN sequences. This reanalysis, we believe, is epistemologically coherent with the facts of the language. Speakers know that VRN contains *something* between V and N, but they do not know exactly what. Before we turn to the analysis, we will introduce the theoretical framework.

3.1 Strict CV basics

The Strict CV approach to syllable structure (Lowenstamm 1996), which falls within the general framework of Government Phonology (Kaye, Lowenstamm, and Vergnaud 1990, and Charette 1991), is an autosegmental theory which holds that phonological representations consist of two main tiers, a segmental layer and a skeletal layer connected by association lines. The skeletal layer is made up of strictly alternating C and V units. Syllable structure is understood to be flat, with no rhymes, no codas and no branching constituents. Whether final (24a) or internal (24b), a closed syllable systematically ends in an empty vocalic position. The dependency and branching relations of Standard Government Phonology are replaced exclusively by local lateral relations (see Scheer 2004).

(24)   Strict CV representations

a.   Final 'closed syllable'   b.   Internal 'closed syllable'

```
C     V     C     V                 C     V     C     V     C     V
|     |     |                       |     |     |           |     |
t     a     t                       t     a     n           t     a
```

There are languages where words are obligatorily made of representations in which each of the strictly alternating C and V slots is filled with its own segment. These languages will have exclusively $CVCV^{n+1}$ type of surface forms (e.g. Yoruba). However, in most languages some of the strictly alternating C and V slots can remain empty and phonetically unpronounced. The following are the conditions on phonetically empty positions, they are expressed in a slightly simpler way than the standard literature but the meaning is identical. As shown in (25b), this mechanism handles vowel-zero alternations. The underlined V-slots are empty.

(25)   Silencing of empty positions
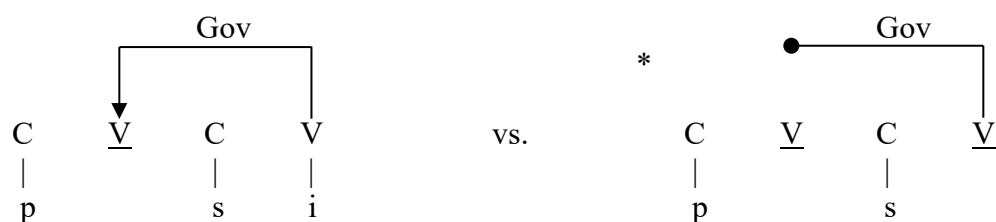
    a.   Domain-Final Parameter (DFP) (based on Kaye 1990a)

       Domain-final empty V slots are silenced (no phonetic interpretation)

```
C     V     C     V̲
|     |     |
x     y     z
```

    b.   Gov(ernment) (based on Charette 1991)[12]

       An empty V-slot can be silenced by Gov *iff* it is followed by a V-slot that is **not** itself silenced

3.2 Government of C-slots and V-slots

In Strict CV, Government is a lateral force that emanates from rightward V-slots. Empty V-slots require Gov (26a). However, the strengthening and weakening relations of Strict CV, known as the 'Coda' Mirror (see Ségéral and Scheer 2001, and Scheer and Ziková 2010), mean that if a V-slot is filled it will not require Gov. In this case, the Gov emanating from the V-slot will target its own onset (26b).

(26)   a. Governed Empty V-slot   b. Governed C-slot
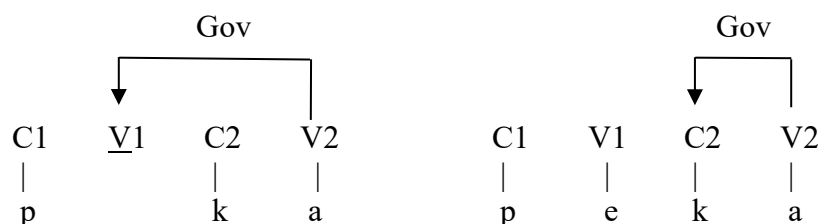
3.3 Floating consonants and conditions on linking

Determining which slots can be silenced and under what circumstances is particularly important to understand the distribution of the consonants alternating with zero. Unlike non-alternating segments, these are analyzed as being underlyingly floating (see Scheer 2016). They are introduced below.

Strict CV representations are autosegmental, the tier of segments is in principle independent from the tier of skeletal positions. This means that the possible configurations of representations include both skeletal positions not linked to segments (empty slots) and

segments with no skeletal positions. These are referred to as 'floating'. The following set is adapted from Bendjaballah and Haiden (2008:28), and Faust, Lampitelli, and Ulfsbjorninn (2018:10).

(27)   Configurations of Strict CV representations

a.   Fixed   b.   Floating   c.   Empty   d.   Unfixed
                             Melody   Skeleton

       C   V   C   V   C   V
       | |
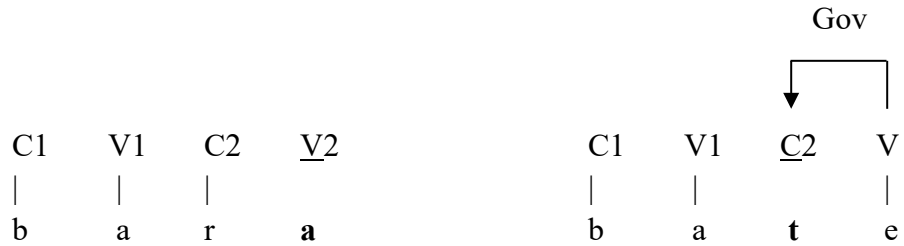   α   β   α   C   V   α   β

It has long been observed that floating segments (27b) are happy to link to empty positions (27c) (see Encrevé 1983, 1988, and Charette 1991). However, floating segments do not link to silenced positions. This includes final empty nuclei in languages where the Domain Final Parameter is active (25a) and governed positions (25b). The idea that a floating piece of melody cannot associate to governed positions originates in Scheer's (1997:80) analysis of vowel-zero alternations in Czech, and summarized in his (2004:90) book. The reasoning was then extended to consonants, which remain afloat under government (see Scheer 2000:151ff.). Since then, the effect has been extended to various other analyses (see Pagliano 2003, Scheer 2016, Faust, Lampitelli, and Ulfsbjorninn 2018, Barillot, Bendjaballah, and Lampitelli 2018, and Ulfsbjorninn 2020).

In (28) beneath we show non-linking of floating melody to silenced positions, either Domain Final or Governed. In the examples, (28a) shows a final floating vowel not linking to a final silenced V-slot (V2), while (28c) illustrates the case where a floating consonant docks to an empty and non-Governed C-position (C2). In contrast, (28b) shows a floating
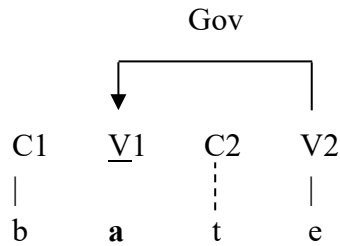
consonant not docking to a Governed C-slot (C2). The floating segments in angle brackets <t> are subject to alternation with zero depending on their surroundings. The ones that are stray erased are bolded.

(28) a. bar<a> [bar]   b. ba + <t>e [bae]

                                                              Gov

        C1   V1   C2   <u>V2</u>   C1   V1   <u>C</u>2   V
        | | | | | |
        b   a   r   **a**   b   a   **t**   e

    c. b<a> + te [bte]

                    Gov

        C1   <u>V</u>1   C2   V2
        | |
        b   **a**   t   e

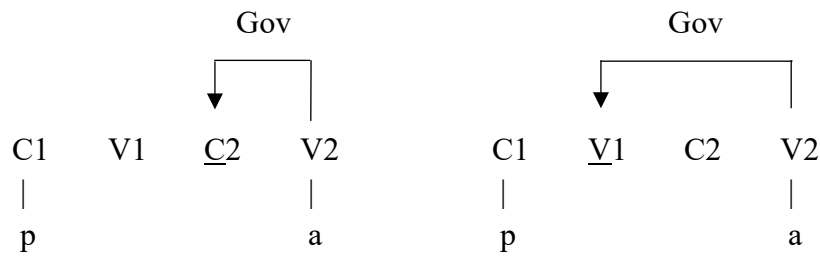Filled C-slots are always subject to Gov intervocalically (see Scheer and Ziková 2010). After empty Vs the situation varies: C-slots may require Gov.

   The situation where empty C-slots can sometimes, but not always, absorb Gov can be modelled in the following structures. In (29) we see empty C-slots sometimes absorbing Gov and sometimes not. This could be parametric across languages, or perhaps contrastive within languages.
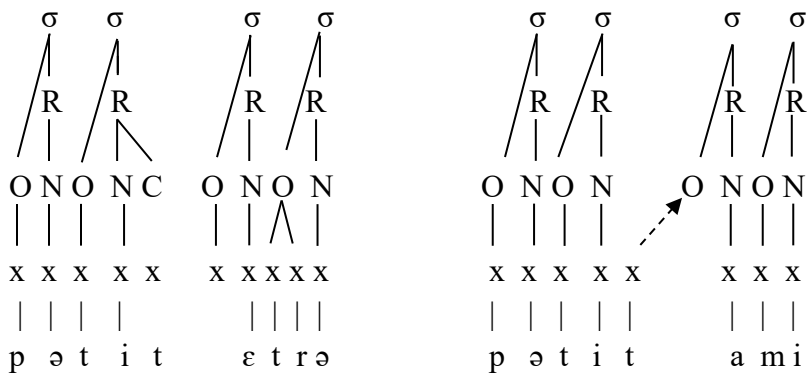
(29)   a. Empty C absorbing Gov[13]   b. Empty C not absorbing Gov

```
              Gov                                Gov
         ┌─────┴──┐                         ┌─────┴──┐
         ▼        │                         ▼        │
   C1    V1    C2    V2              C1    V1    C2    V2
   |           |     |               |     |           |
   p           a     |               p     |           a
                     a
```

Haitian requires such a distinction because the empty C-slots of some affixes, such as the

infinitive, behave differently to the empty C-slots of other affixes, such as the definite

article. This difference recapitulates the difference between empty null vs. non null onsets,

labelled as "pointless" vs. "pointed" positions in this paper. They have been used to model

h-aspiré in French, in relation to liaison (see Encrevé 1988). Briefly outlined, Encrevé

argued that a word like *hêtre* 'beech' begins with an initial empty but non null onset, as

opposed to *ami* 'friend' whose empty onset is null. Using standard syllabic constituency

along with unspecified skeletal (temporal) slots, a non-null onset is represented as an empty

skeletal position attached to a syllabic node, whereas an empty null onset has neither a

temporal position nor melodic content. The representations below illustrate the situation.

(30)   a. *petit hêtre* 'small beech'   b. *petit ami* 'boyfriend'

```
   σ   σ      σ   σ              σ   σ       σ   σ
   |   |      |   |              |   |       |   |
   R   R      R   R              R   R       R   R
   |   |      |   |              |   |       |   |
 O N O N C  O N O N          O N O N      O N O N
 | | | | |  | | ∧ |          | | | |   ↗  | | |
 x x x x x  x x x x x        x x x x x     x x x
 | | | | |    | | | |        | | | | |     | | |
 p ə t i t    ɛ t r ə        p ə t i t     a m i
```

Only an empty null slot can host a floating consonant /t/ (30b), according to the author. In strict CV terms, the distinction between null and non-null C-slots obtains as the result of their ability to absorb Government from the following vowel, as previously explained in (29). French is even more interesting for it allows so-called h-aspiré onsets to either remain empty or to be realized as a glottal stop. Pagliano (2003:640) addressed this phenomenon as the result of the application of Government, as shown below in (31).

(31) *grosse housse* 'big cover'

        a. [grosəus]   b. [grosʔus]

The token *housse* [us] lexically begins with a floating glottal stop, which surfaces when Government triggers the preceding final empty V (31b). It remains afloat when its skeletal slot is governed (31a). The realization of the preceding empty V as schwa occurs under the same conditions.

      The exact same mechanism allows us to account for the realization of floating segments in Haitian. Following Encrevé 1988, we assume that the difference between a "pointed onset" and a "pointless onset" is whether a C-slot comes with a skeletal point (x-slot) or not. Some affixes begin with a pointless onset (a C-slot without an x-slot) and do not require Gov, and other affixes begin with a pointed onset (a C-slot with an x-slot) and do require Gov. Furthermore, as Encrevé 1988 shows, floating segments may also have underlying x-slots.

For more details about the Strict CV model, the reader is referred to the original work quoted above. Many recent papers have endorsed this approach to syllable structure, including Rizzolo 2002, Scheer and Szigetvári (2005), Rucart (2006), Lahrouchi (2003, 2018a,b), Passino (2013), Faust (2014, 2015, 2020), D'Alessandro and Scheer (2015), Newell (2016), Faust and Enguehard (2018), and Ulfsbjorninn (2020).
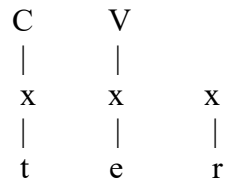
Armed with the concepts of empty positions, floating melody and Government, we return to Haitian word-final R and VRN sequences and provide the analysis.

3.4   *VR# sequences*

As we have seen in section 1.5, VR# forms like [tɛ] are paired with the same definite determiner form as the vowel-final forms [kafe] 'coffee', [kafe-a] 'the coffee'. Nikiema and Bhatt 2005 take this to be evidence that in these forms, R is located in the nucleus. However, a more direct interpretation of this fact is that there is no *syllabified* R in VR# sequences, it is floating <R>.

Within the theoretical framework used in this paper, we claim that stem-final <R> behaves as a liaison consonant, which remains afloat without its own syllabic space. The underlying representation of R-final stems like *terre* is illustrated below in (32).

(32)   /te\<r\>/ [tɛ] 'land'

```
              C        V
              |        |
              x        x        x
              |        |        |
              t        e        r
```
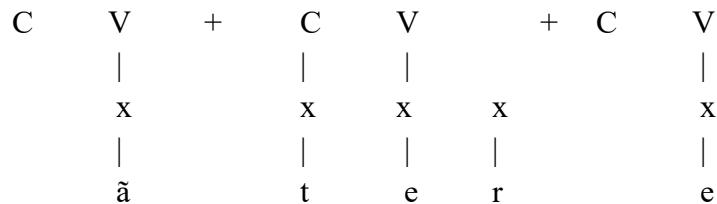
Given this kind of representation, stem-final \<R\> remains phonetically unpronounced until it is followed by vowel-initial suffixes, which create a liaison context favorable to its realization.
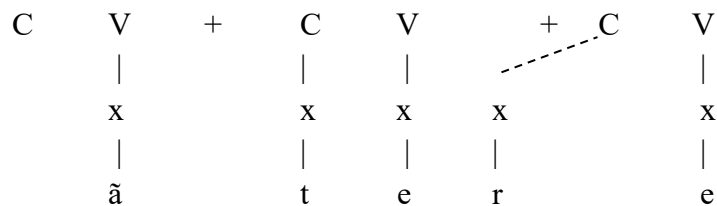
The infinitive marker -e is one such suffix, its syllabic representation contains an empty C-slot without an x-slot. As such, it does not require Government and it is a suitable location for linking the floating \<R\> with its underlying x-slot. This is illustrated in (33).

(33)   Derivation of [ãteʀe] 'bury'

a.   URs   /ã + te\<r\> + e/ 'under + earth + INF'

```
        C      V      +      C      V              +    C      V
               |             |      |                          |
               x             x      x      x                   x
               |             |      |      |                   |
               ã             t      e      r                   e
```

b.   Computed form: [ãteʀe] 'bury'

```
        C      V      +      C      V            +  ⟍C      V
               |             |      |              ⟋       |
               x             x      x      x─ ─ ─ ─        x
               |             |      |      |               |
               ã             t      e      r               e
```

V-initial morphemes are thus made of a CV unit whose C is empty but whose V is filled. In non-liaison contexts, i.e. when word-final or followed by a C-initial suffix, the floating \<R\> has nowhere to associate and it will remain unpronounced. The opposite situation

occurs in word-internal position, as we will see in the next section. The syllabic support remained but the floating <R> was lost.

4   Blocking regressive nasalization, a question of locality

As we have seen in sections 2.1 and 2.2, Nikiema and Bhatt's (2005) analysis of VRN sequences bases itself on the presence of an underlying R occupying the nucleus. They stipulate that rhotic diphthongs resist nasalization because the two features would be incompatible.

The fact is, however, that there is no synchronic evidence for R in these sequences. Ultimately it is only knowledge of the etymon that leads to the analysis, something that would be inaccessible to child learners.

Assuming a representational solution, the unbiased learner would probably indeed posit a blocker between the trigger and target of regressive nasal assimilation, but they would have no evidence for its *segmental identity*. Therefore, we propose a more epistemically direct analysis of nasal assimilation.

The child learner knows that in all the forms with optional regressive nasal assimilation the vowel is followed by a nasal consonant: VN (/fami/ [fãmi] 'family'). Words such as VCN ([palmis] 'palm', [kalm] 'calm') do not have regressive nasalization. Therefore, the child knows that when V and N are not adjacent regressive nasal assimilation is not triggered.

Based on this take on the data, we propose that the child interprets phonetically adjacent VN sequences without assimilation as non-adjacent phonologically. This phonetically invisible non-locality is achieved with an empty CV. Its origin, an

etymological rhotic consonant, proceeded in a very similar manner to compensatory lengthening (CL) (see Hayes 1989, Sezer 1986, and Beltzung 2008). This is illustrated in (34) with a familiar example from the history of English. A segment's featural content can become unlinked from its skeletal position, leaving only the empty structure behind. This can have the consequence of triggering 'compensatory' segmental lengthening, but we argue this final step is not strictly necessary, as long as the empty structure is recoverable by children in acquisition.

(34)　Diachronic segmental deletion and compensatory lengthening

　　a.　niçt 'night'

```
C     V     C     V     C     V̲
|     |     |           |
n     i     ç           t
```

　　b.　Deletion of ç producing ni^{CV}t

```
C     V     C     V     C     V̲
|     |                 |
n     i                 t
```

　　c.　Compensatory Lengthening

```
C     V     C     V     C     V̲
|     |_____    |
n     i                 t
```

We propose that in Haitian, VRN sequences underwent the same process as shown in (34b) above, but that Haitian did not also undergo the spreading/lengthening step of CL (34c).

Interestingly, the same process accompanied by vowel lengthening is attested in other Caribbean French varieties (see Nikiema and Bhatt 2005:61): for example, Reunion

[ma:] 'pond', [ze:b] 'grass'. Haitian, however, does not have long vowels or consonantal geminates. It seems to strictly not permit segmental spreading (bipositionality).

Since, as we have established, the representational tiers are independent from each other, the empty CV that followed diachronically from the loss of /r/ does not actually have to be filled. Instead, we propose that in some words at least it was retained as its presence can still be inferred from the disruption of locality between the V and N in historically VRN words. This unifies VRN words with VCN words and keeps them representationally distinct from VN words with regressive nasal assimilation. The contrast is shown in the structures in (36) below. The mapping condition that connects the phonological description and the phonetic interpretation is shown in (35).

(35)   Phonology to Phonetic mapping

      V *may* be interpreted as Ṽ when description contains: **VN**

(36)   Condition on optional regressive assimilation and associated structures

      a.   VN

```
C    V    C    V
|    |    |    |
f    a    m    i
```

      Phonological sequence: **V N** V

      Interpreted: [fami] or [fãmi]   'family'

b.   VRN

```
C    V    C    V    C    V
|    |              |    |
f    ɛ              m    e
```

Phonological sequence: **V C**^{empty} **V**^{empty} **N**

Interpreted: [fɛme], *[fɛ̃me]   'close'

c.   VLN

```
C    V    C    V    C    V
|    |    |         |    |
p    a    l         m    i…
```

Phonological sequence: **V C**^{filled} **V**^{empty} **N**

Interpreted: [palmis] *[pãlmis]   'palm'

The structure in (36a) shows that it contains the structural description VN. This allows the regressive nasal assimilation. The structures in (36b,c), on the other hand, do not contain VN as part of their phonological structural description and as such cannot be interpreted with regressive nasal assimilation.

This representational solution directly matches the acquisitional description of the facts, paraphrased as: 'there's something blocking V and N in words: *x, y, z...* but I do not know what it is'. The absence of specificity is reflected by the emptiness of the locality-disrupting CV.

5   Deriving the variants of the definite article

In section 1.5, we have seen that the shape of the definite article varies depending on the nature of the stem-final segment: a consonant-initial variant appears after C# (e.g. [ʃat-la]

'the cat'), while a vocalic variant appears after V# (e.g. [ʒenu-a] 'the knee'). This results in a highly marked hiatus sequence, which curiously also involves underlying VR# (e.g. [tɛ-a] 'the earth'). Following Nikiema 1999, we show within the strict CV approach that the variants can be derived from a single underlying form, whose initial consonant is floating. So is stem-final R. Under specific Government conditions, these consonants either surface or remain silent.

The precise conditions on nasal spreading are unique to affixes and we have merely described the pattern in this paper (see section 1.5). We leave it to future work to attempt to explain the special conditions on nasal spreading. What we will focus on is the syllable structure shape of the determiner variants. Why there are both consonantal and vowel-initial variants and why they are distributed the way they are.

As shown in (37), following Nikiema (1999)'s Standard Government Phonology analysis, we propose that the definite determiner's /l/ is floating beneath its skeletal slot. The reader is also referred to Cadely (1996, 1997) for his analysis of the floating nature of the lateral consonant, as quoted in Nikiema (1999:75).

(37)   UR of Haitian definite determiner

```
C       V
|       |
x       x
        |
l       a
```

The following three Strict CV assumptions are required to understand the analysis, these have been introduced in section 3.1 but they are summarized again here for the unfamiliar reader.

First, is the assumption that empty positions require *Government*. This is an inhibitory force that permits empty positions to remain phonetically uninterpreted (see Kaye 1990a, Charette 1991, Ségéral and Scheer 2001).

The second assumption is that the empty C position of the definite article is a pointed onset and requires Government (see Charette 2003, Faust 2015, and Faust, Lampitelli, and Ulfsbjorninn 2018).

Third, floating melody does not dock to governed positions (see Scheer 2000:151 on German glottal stop, Pagliano 2003 on French glottal stop, Barillot, Bendjaballah, and Lampitelli 2018 on Somali verb suffixes, Faust, Lampitelli, and Ulfsbjorninn 2018 on the Italian definite article, and Ulfsbjorninn 2020 on Galician's definite article).

These conditions mean that the phonetic interpretation of the /l/ of the determiner is contingent on the phonological shape of the stem, specifically its right edge.

As shown in (38b), if the right edge of a stem ends in an empty nucleus, this will attract Government from V_1. Although C_1 has an x-slot, in this configuration, with a leftward empty V-slot that absorbs the Gov from V_1, C_1 is ungoverned and it becomes a good docking site for the determiner's floating /l/.

(38)   Stem ending in a lexically associated consonant

    a.   UR   ʃat + <l>a 'the cat'

```
C₃   V₃   C₂   V₂   +      C₁   V₁
|    |    |                |    |
x    x    x                x    x
|    |    |                     |
ʃ    a    t                l    a
```

    b.   <l> links to C₁ resulting in its interpretation

```
                    Gov
              ┌──────────────┐
              ▼              │
C₃   V₃   C₂   V₂   +   C₁       V₁
|    |    |             |        |
x    x    x             x        x
|    |    |              `--.    |
ʃ    a    t                 l    a
```

The derivation in (38) is the reason that the consonant-initial determiner appears after stems ending in a lexically associated consonant.

    Conversely, the final position of vowel-final stems does not require government as it is lexically filled. This leaves V_1's Government to target C_1 and, as a result, the floating <l> cannot dock to C_1, thereby remaining unpronounced. This derivation is shown in (39).

(39)   Stem ending in filled nucleus

    a.   UR   ne + <l>a   'the nose'

```
C₂   V₂   +   C₁   V₁
|    |        |    |
x    x        x    x
|    |        |    |
n    e        l    a
```

b.	<l> does not link to C_1, it remains unpronounced

```
                       Gov
                  ┌─────────┐
                  ▼         │
C₂      V₂    +   C₁        V₁
|       |        |         |
x       x        x̲         x
|       |                  |
n       e       <l>        a
```
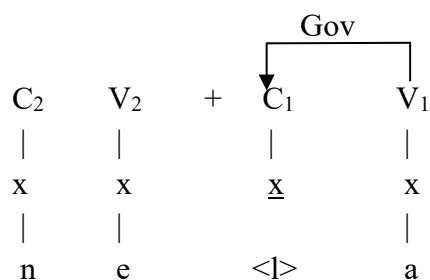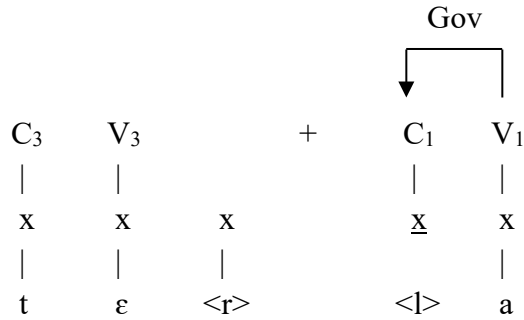
This derivation shows how the vowel-initial variant of the determiner appears after vowel-final stems, resulting in the highly marked (non-optimized) hiatus sequences.

The situation is similar for stems such as /ter/ 'land', except that both <R> and <l> remain afloat. This is shown in (40b). It follows doubly from the fact that the C_1 position of the determiner already has an x-slot, and so could not receive one from the floating <R>, and also that the only C-slot that is available for the floating consonants to link to is Governed in this configuration.

(40)	Stems with final floating <r>

	a.	UR	tɛ<r> + <l>a

```
C₃      V₃              +      C₁      V₁
|       |                     |       |
x       x       x             x       x
|       |       |                     |
t       ɛ       r             l       a
```
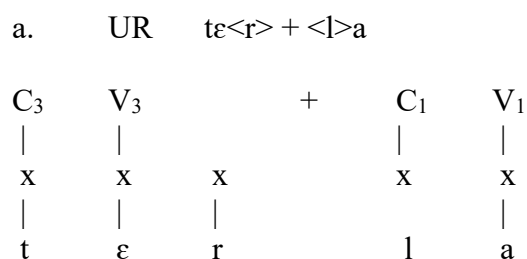
b. C_1 gets Government from V_1, (both <r> and <l> remain afloat)

```
                              Gov
                             ┌───┐
                             ↓   │
C₃      V₃         +      C₁      V₁
|       |                 |       |
x       x       x         x̲       x
|       |       |                 |
t       ε       <r>       <l>     a
```

The floating <r> cannot attach to the following C-slot since it is governed and has a floating consonant <l> beneath it. As we have seen in section 3.3, a similar situation prevents liaison consonants from attaching to h-aspiré initial stems in French, according to Encrevé (1988). The reader is also referred to Scheer (2005).

The representations in (38), (39) and (40) show that it is possible to analyze the syllable structure shape of the Haitian definite determiner without positing selectional allomorphy along precisely the same mechanisms as Nikiema (1999).

This makes the analysis simpler from an architectural perspective and relocates the typological odd non-optimizing aspect of the phonologically conditioned allomorphy directly in the underlying form of the definite determiner. Moreover, unlike Nikiema and Bhatt (2005), there is no need to propose a nuclear R. Instead, a derivation accounts for the apparent deletion of both the VR# stem's floating R and the determiner's floating <l>.

6   Conclusion

In a paper, largely on the synchronic status of R in Haitian, we split the etymological VRN and VR# sequences. The former are implicated in the counterfeeding of regressive nasal

assimilation, while the latter are involved in Haitian's infamous non-optimizing phonologically-conditioned definite determiner allomorphy.

We claimed that Haitian's etymological VRN sequences (that block nasalization) have lost the rhotic consonant's melody but, crucially, they retain its syllabic space (now empty). This empty CV disrupts the locality between the nasal consonant and the preceding vowel, resulting in surface VN sequences that resist nasal assimilation. The representational solution matches the epistemic condition for the learner, "something blocks V and N's locality, but there's no way to tell what". Elsewhere, in word-final position, there is an R-zero alternation. There we proposed that R is a floating consonant, which surfaces only when it is followed by a suffix whose C-slot position is empty. Using floating consonants as a device allowed us to also re-analyze the syllable structure shapes of the definite determiner's allomorphs. We revealed that this is not allomorphy at all *stricto sensu*, it is derived by the phonology. The definite determiner begins with a floating /l/ and it surfaces in accordance to general phonological conditions.

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(Lahrouchi)

CNRS – Université Paris 8

UMR 7023 – Structure Formelle du Langage

2 rue de la Liberté

93526 Saint-Denis Cedex, France

mlahrouchi@univ-paris8.fr

(Ulfsbjorninn)

University of Deusto

24 Avenida de las Universidades

Bilbao 48007, Spain

s.ulfsbjorninn@deusto.es

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[1] "Nasalized and non-nasalized variants may occur in free variation in the speech of Haitian" (Cadely 2003:5). The rule of nasal assimilation is "optional, but frequently applied, especially in connected discourse" (Tinelli 1981:64). The optionality has the following character. 'room' can be either [ʃɑ̃m] or [ʃam]. Both realizations are possible; they are in free variation because the nasal assimilation rule is optional in Haitian. However, the word meaning 'charm' *must* surface as [ʃam] without nasalization.

[2] A large number of word-final clusters found in Modern French arose from the loss of word-final schwa. These clusters often undergo simplification through deletion of the final consonant, especially in Northern varieties: For instance, Villeneuve (2010:133) has reported that in Vimeu French, words like *boucle* 'buckle', *membre* 'member', *buffle* 'buffalo' and *chanvre* 'hemp' are realized as [buk], [mɑ̃b], [byf] and [ʃɑ̃v], respectively (see also Armstrong 2001, and Pooley 1996). This also occurs to lesser extent in some varieties spoken in the Parisian neighbourhood (see Laks 1977, and Dell 1981). Additionally, it has been suggested

that this simplification is subject to variation, depending on phonological and sociolinguistic factors, as well as on speech style and speech rate (see Cornulier 1978, Dell 1973, and Milne 2013, 2014). According to Dell (1976:77), words ending in an obstruent-liquid cluster drop their final consonant only when followed by another word beginning with a consonant (e.g., *arbre pourri* [aʁbpuri] 'rotten tree', *cercle de craie* [sɛχkdəkχɛ] 'chalk circle').

[3] As stated, the *loi de position* is relatively simplified for expository purposes. The distribution of mid vowels in French obeys many other factors, including (i) the quality of the mid vowel (e.g. mid round vowel may vary from closed to open in words like *aurai* 'have.1sg.future', *auras* 'have.2sg.future' *saurai* 'know.1sg.future', according to Grammont (1933:266), (ii) the nature the neighboring consonants (for example, before /z/ only [o] is found: e.g. *cause* 'cause', *ose* 'dares', *dose* 'dose' (Fery 2003:6), and (iii) the nature of the neighboring vowels (non-final vowels tend to assimilate with final ones, regardless of their syllabic context). However, the pattern is generally more robust in southern than in northern varieties (see Baraduc et al. 1989, Blanchet 1993, Durand and Lynche 2002, among others). In Northern French, many examples are found where close and open mid vowels can occur in the same context, as the following minimal pairs illustrate: *pomme* [pɔm] 'apple' / *paume* [pom], *sol* [sɔl] 'ground' / *saule* [sol] 'willow', *fait* [fɛ] 'fact' / *fée* [fe] 'fairy', jeune [ʒœn] 'young' / jeûne [ʒøn] 'fasting'.

[4] Nasal assimilation can also be progressive in Haitian, though it is less common than regressive assimilation: e.g. [desine] or [desinẽ] 'draw', [ne] or [nẽ] 'nose', [bobine] or [bobinẽ] 'roll up'. According to Tinelli (1974:358), "very few forms have escaped regressive nasalization [...] Progressive nasalization, on the contrary, has more exceptions than examples" (see also Valdman and Iskrova 2003).

[5] The process is generally reported as highly frequent, especially among rural monolinguals. According to Tinelli (1974: 346), it ''is still a sound generalization to state that, with very few exceptions, a vowel is always nasal when it is followed, within morpheme boundaries, by a nasal consonant''. However, Cadely (2002:447) has found that out of 1374 items containing a VN sequence in the *Diksyonè Òtogaf Kreyòl Ayisyen*, 498 undergo nasalization.

[6] A reviewer suggested that in words like [kɔ̃twɔl] 'control' /w/ would be phonemic rather than allophonic, for there is probably no reason for Haitian speakers to identify it as a variant of the rhotic consonant. Yet,

there is a broad consensus among linguists that /r/ surfaces in all Haitian varieties as [w] when followed by a round vowel (see d'Ans 1968, Valdeman 1978:55, Dejean 1980:97, Cadely 2003:09, among others). Indeed, Haitian contrasts /r/ with /w/ before unrounded vowels (e.g. *rete* 'remain' / *wete* 'remove'), whereas only /w/ appears before rounded vowels. This is further supported by recent loanwords, where /r/ is systematically adapted as [w] when followed by a round vowel: for example, English *bathroom* → [batwum], *rock* → [wɔk], *roaming* → [womiŋ], *remote control* → [rimɔtkɔ̃twɔl], *drug dealer* → [dwɔgdilɛ], *broadcast* → [bwɔdkas] (see also Dejean 1980:100, Cadely 2003:28, and Govain 2014).

[7] Glide insertion is subject to variation after low mid-vowels. Valdman (1978) claims that among mid vowels, only 'tense' ones allow glide insertion, while Nikiema (1999:71) holds that the process can also occur after 'lax' mid-vowels (e.g. [lapɛ̃-jã] 'the rabbit'). In this paper, we will assume that these glides are mere phonetic (coarticulation) reflexes of the pronunciation of adjacent vowels, as opposed to the definite article's consonant which is phonological in nature (see section 5).

[8] In the literature, the alternation at hand is typically referred to as allomorphy. We turn to this labelling in section 3.4. We will be arguing that forms like [tɛ] and [ãteʀe] share a common underlying form, hence these turn out to be not allomorphy in a narrow technical sense.

[9] This also accounts for the change in quality of the stem vowel (ε > e), which no longer belongs to the same syllable as R.

[10] The latter is a closed syllable, where /l/ sits in a rhymal position in reference to standard Government Phonology (Kaye, Lwoenstamm, and Vergnaud1990), equivalent to coda in standard syllabic theory.

[11] Will this ranking not cause havoc with other vowel-initial affixes, such as the infinitive –e?

[12] The reader is referred to Kaye (1990b), Bendjaballah (2001), Scheer (2004), and Lahrouchi (2018a) for empirical case studies of these phenomena from Moroccan Arabic, Berber, Slavic and others.

[13] In such a structure, V_1 will be realized as a schwa or an epenthetic vowel depending on the language. If V1 is lexically filled it would constitute a vocalic hiatus.