FRENCH SCHWA

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Introduction

It is a well-known fact that French schwa /ə/ behaves differently from all the other vowels of French It is characterized by its realization/nonrealization and alternation with /ɛ/ The examples in (1) and (2) illustrate the basic schwa realization patterns in Standard French (henceforth SF)

(1) The ə ~ zero alternation

Schwa preceded by a single consonant	Schwa preceded by a consonant cluster
Word-initially	
Optional	Obligatory
petit gars [p(ə)ti gɑ] 'young boy'	*crevasse* [krəvas] 'crevasse'
demain [d(ə)mɛ̃] 'tomorrow'	*premier* [prəmje] 'first'
Debout! [d(ə)bu] 'Get up!'	
Word-medially	
Obligatorily deleted	Obligatory
samedi [samdi] 'Saturday'	*vendredi* [vɑ̃drədi] 'Friday'
Word-finally	
Obligatorily deleted	Normally deleted
rare [rar] 'rare'	*triste* [trist] 'sad'
bête [bɛt] 'stupid'	*porte* [pɔrt] 'door'

(2) the Closed Syllable Adjustment
i e the ə/zero ~ ɛ alternation

acheter [aʃte] 'to buy' inf	*achète* [aʃɛt] 'buys' 1, 3 sg pres ind

Among the things to be noted in those examples, roughly in SF schwas are often unrealized in the initial contexts when preceded by a single consonant When preceded by a consonant cluster, on the other hand, schwas can be unrealized in the final contexts As to the ə/zero ~ ɛ alternation, the alternation occurs in the environment of $əC ə]_{\omega}$ In Midi French, i e the variety of French spoken in the South of France (henceforth MF), by contrast, schwas are normally pronounced Apart from these alternations, the most peculiar fact about schwa is its phonetic identity with [œ] in many dialects I choose to transcribe it as /ə/ for two reasons First, there are still speakers of SF who phonetically differentiate schwa from [œ] For such speakers schwa is a centralized vowel with no lip rounding Second, since schwa behaves differently from /œ/, this distinctly indicates that it has a different status

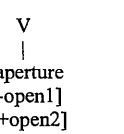
For this paper I reexamine a number of issues concerning the realization patterns of schwa under an Optimality Theoretic framework (henceforth OT) in an attempt to bring to light the nature of its basic alternation patterns Since there are issues that have not yet been properly addressed with respect to proclitics, I will simply focus on lexical internal schwas I organize the paper in the following fashion Section 1 deals with the identity of schwa and the ə ~ zero alternation exhibited by lexical words In Sections 2 and 3 we will look over the simplest cases of schwa deletion in word-final and word-initial positions, respectively Section 4 addresses the question of how the output form with a stressed enclitic *le* is selected for the optimal form in the imperative We will see how object clitic pronouns are assigned the status of a prosodic word at the right edge of a clitic group Section 5 examines the behavior of the subject clitic pronoun *je* in contrast to the object clitic pronouns In Section 6 certain issues relating to the Closed Syllable Adjustment are examined in the light of the Correspondence Theory proposed by Kenstowicz 1995 It is claimed that the ə ~ ɛ alternation exhibited by future and conditional verb forms are based on the present indicative singular stems

1 The Identity of Schwa and its Alternation with Zero

So far three major solutions have been proposed to account for the alternating patterns of schwa One analysis has recourse to diacritic marking to differentiate schwa from /œ/ and /ø/ (Fischer 1980, Morin 1978) The second solution views schwa as underlyingly an unspecified empty vowel (Anderson 1982 551, Bullock 1995a, Montreuil 1994 214) Its featural content gets specified late in the derivation by a default rule The problem with this solution is that it is not clear how /œ/ could be an unspecifed vowel It is an extremely marked vowel in the vocalic system of any language The third solution views schwa as a floating vowel without its position on the skeletal tier (Tranel 1987) On this analysis it is not certain how the ə ~ ɛ alternation should be treated Tranel simply considers the alternations to be lexical allomorphies

In order to account for the differences between the alternating and nonalternating patterns of schwa, I adopt a number of assumptions As to the identity of schwa I propose that schwa is a moraless vowel with only two aperture features [1] This analysis captures the distinction between the ordinary vowels and schwa Normally full vowels are assigned morae to form syllables with the vowels as nuclei In contrast, it can be assumed that schwa, lacking place features, cannot receive weight, thus it is unrealized on the surface and is subject to alternations under certain prosodic configurations I tentatively represent schwa as follows

(3)



[1] Alternatively schwa may be viewed as a set of floating features identical with /œ/, but without a root node in the sense of Zoll 1996 This analysis combines the first and third solutions that we have just briefly touched on above Schwa could be equated with a diacritically marked set of floating features Under this solution since there is no root node, each feature can behave independently The alternation of ə ~ ɛ can be accounted for by leaving the feature [round] or [lab] unparsed in the environment for the Closed Syllable Adjustment The ranking of Align [round], Foot above Parse Feat would handle the alternation in SF One problem with this solution is that the stressless nature of schwa would be unaccounted for I will not pursue this solution in this paper

Given the assumption that schwa is unassociated to a mora when unrealized, what is needed is a constraint that blocks schwas from receiving a mora *μ ə does just that It ensures that schwas do not receive a mora [2] I assume that given schwa's lack of place features, *μ ə blocks GEN from positing a mora for schwas Realization of a schwa thus necessarily incurs a violation of this constraint This will basically explain the nonrealization of schwa we must, however, address the question of how the optional nature of schwa realization can be accounted for This optional nature is not necessarily due to different styles of speech and dialect differences Some words always keep their schwas realized in any style Morin 1988 165 gives some examples from the speech of the Parisian region

(4) *geler* [ʒœle] / [ʒle] 'freeze'
peler [pœle] / *[ple] 'peel'
peser [pœze] / *[pze] 'weigh'

Since the initial cluster [pl] in *peler* would be perfectly legitimate, it is hard to understand why the schwa cannot be deleted in *peler* The fact that in the word *pelouse* 'lawn' the schwa can be optionally deleted shows that nonrealization of schwa in the initial contexts is often lexically determined

It is debatable whether *μ ə can be ranked differently to account for these lexically determined schwa realization patterns Ito and Mester (1995 186fn5) assume that there are limits on constraint rerankings They make their analysis of Japanese lexical stratification in accordance with their view that most cases of lexical differences result from the reranking of faithfulness constraints Parse and Fill with respect to invariantly ranked well-formedness and other constraints I use Parse ə to account for lexical and dialectal differences It can simply be assumed that parse ə is positioned differently in accordance with different styles and dialects, and words

The second thing that I adopt is that schwa cannot constitute a foot on its own (Bullock 1995b, Montreuil 1994, Selkirk 1978) It, instead, forms a trochaic foot with a preceding syllable This view is meant to account for the absence of stress on schwa The fact that given a sequence of a full vowel and a schwa word-finally, stress necessarily falls on the full vowel indicates that a trochaic foot is present over the final two syllables Moreover, there is cross-dialectal evidence that syllables with a schwa form a trochaic foot within a prosodic word In MF the phonetic quality of schwa can differ in whether a schwa syllable forms a trochaic foot When it constitutes a trochaic foot, the schwa is realized as a centralized unrounded midvowel When the syllable has no option but to form a single foot, the schwa is invariably realized as the front rounded midvowel [ø] (Durand, Slater, and Wise 1987, Watbled 1995) I adopt two constraints (5) and (6) to account for the formation of trochaic feet

(5) Tr ə A syllable with a schwa forms a trochaic foot with a preceding syllable

(6) *Str ə Schwas do not bear stress [3]

Under this view the ə ~ ɛ alternation can be accounted for in the following fashion Since a

[2] Yearly 1995 considers Russian jer vowels to be underlyingly moraless, however, she chooses not to address the question of how fully specified segments can be moraless Another puzzling thing about her analysis is that she assumes that morae are present underlyingly

[3] Although this constraint is adopted from Urbanczyk 1995 510, it seems to be attributed to someone else

trochaic foot formed over two consecutive syllables with schwas as their nuclei in the environment of ə Cə]$_{\omega}$ necessarily violates Tr ə, and *Str ə, the initial schwa is expected to change to some other vowel I will return to this below

2 Schwas in the final contexts

Nonrealization of word-final schwas in SF can be interpreted as resulting from ranking *μ ə above parse ə There is no evidence for ranking NoCoda with respect to Parse ə Thus they are unranked with respect to each other This is illustrated in (7)

(7) * μ ə >> Tr ə >> Parse ə, NoCoda [4]

coupe [kup] 'cut'

/kupə/	*μ ə	Tr ə	Parse ə	NoCoda
a kup<ə>			*	*
b ku͡pə	*!			
c ku pə	*!	*		

Although the MF pronunciation [ku͡pə] is ruled out in this tableau, it arises by ranking Parse ə above *μ ə When it is ranked at the top of the hierarchy, Tr ə will function as the selector for the form Note also that it might be contended that NoCoda is unnecessarily posited Although this is true, I posit this constraint in that particular spot to show that SF favors nonrealization of schwas in the final contexts over that in the initial syllable Thus NoCoda is ranked below the other syllable-based constraints with other types of constraints in between In the next section we will examine schwas in the initial contexts

3 Schwas in the initial syllable

As is illustrated in (1), generally in the word-initial contexts schwas are optional regardless of whether resulting clusters can be found word-medially as onset clusters For instance, a cluster stop plus stop results from nonrealization of a schwa The initial cluster [pt] in the word *petite* [ptit] cannot occur as an onset Levin 1987 258 assumes that such initial consonants are not incorporated in the onset for lack of sonority sequencing It is not clear, however, how they are prosodized Lyche and Girard 1995 208-9, Rialland 1986 199 indicate that there is no resyllabification of initial consonants of lexical words across their left word boundaries In other words the peripheral consonant [p] of *petite* must remain at the left edge of the lexical word I follow Yearly 1995 546-47 in assuming that such unsyllabifiable consonants are parsed as appendices directly by the prosodic word This prosodization is illustrated in (8) and (9)

[4] I use the following symbols for clarity of exposition
Dot a syllable break, σ a syllable, ͡ a trochaic foot, ω a prosodic word, c a clitic group

(8) *μ ə, Son, Alıgn Lex L, Syl L >> Trə >> Parse ə , *Gap, NoCoda

petıte [ptıt] 'lıttle'

/pətıtə/	*μ ə	Son	Lex L, σ L	Trə	Parse ə	*Gap	NoCoda
a pə tıt<ə>	*			*!	*		*
☞b p<ə> tıt<ə>			*		* *		*
c p<ə>tıt<ə >		*			* *	*	*!
d p<ə> tí t͡ə	*		*!		*		
e p<ə>tí t͡ə	*	*!			*	*	
f pə tí t͡ə	**!			*			

(9) *μ ə, Son, *Alıgn Lex L, Syl L, Alıgn Lex L, PrWd L >> Tr ə >> Parse ə, *Gap, NoCoda

la petıte [laptıt] ' lıttle gırl'

/la pətıtə/	*μ ə	Son	Lex L, σ L	Lex L, ω L	Tr ə	Parse ə	* Gap	NoCoda
a [la [pə tıt]ω]c<ə>	*				*!	*		*
b [lap <ə>tıt]c<ə>			*	*!		**		**!
c ☞[la [p<ə> tıt]ω]c<ə>			*			**		*
d [la [p<ə>tıt]ω]c<ə>		*				**	*	*!
e [lap <ə>tí t͡ə]c	*		*	*!		*		*
f [la [p<ə> tí t͡ə]ω]c	*		*!			*		
g [la [p<ə>tí t͡ə]ω]c	*	*!				*	*	
h [la [pə tí t͡ə]ω]c	**!				*			

As seen, several new constraints are used in these tableaux I define them as follows

(10) a Son Clusters lacking sonority sequencing must be banned
b Alıgn Lex L, Syl L The left edge of a lexical word must be aligned with the left edge of a syllable I use this constraint in absolute terms rather than gradiently
c Alıgn Lex L, PrWd L The left edge of a lexical word must coincide with the left edge of a prosodic word This constraint is also used gradiently here
c *Gap Unparsed segments must not be left inside a syllable and a foot This constraint is attributed to Yearly 1995 561-62

It might be argued that Alıgn Lex L, Syl L is superfluous Two observations must be made here The most peculiar fact about the left edge of a lexical word in French is that although the leftmost consonant of a lexical word seems to remain within the prosodic word, a consonant external to the lexical word gets prosodized by the prosodic word when a schwa is unrealized By way of illustration, although the [p] of *petite* is at the left edge of the prosodic word, the initial consonant of the demonstrative *ce* is incorporated into the prosodic word as seen in (11)

(11) *μ ə, Son, Alıgn Lex L, Syl L, Alıgn Lex L, PrWd L >> Tr ə >> parse ə, *Gap, NoCoda

ce garson [sgarsɔ̃] 'this boy'

/sə garsɔ̃/	*μə	Son	Lex L, σL	Lex L, ωL	Trə	Parse ə	*Gap	NoCoda
a [sə [gar sɔ̃]$_{\omega}$]$_{e}$	*				*!			*
b ☞[[s<ə> gar sɔ̃]$_{\omega}$]$_{e}$				*		*		*
c [[s<ə>gar sɔ̃]$_{\omega}$]$_{e}$		*	*!			*	*	*

Although optimal output form would be b with or without Align Lex L, Syl L in this tableau, the second reason is more compelling Without Align Lex L, Syl L the pronunciation [pətit] with the realized schwa would remain unaccounted for As we noted above, we are taking the position that moving Parse ə to different spots in the hierarchy can account for different optimal output forms for different styles and dialects In SF it must be ranked below all syllable-based constraints except NoCoda in such a way as to ensure that candidates with the unparsed schwas in word-final position tie with one other Parse ə then selects the winner In (9) positioning parse ə between Align Lex L, PrWd L and Tr ə will yield the pronunciation [la pətit] Without Align Lex L, Syl L only [la ptit] would be selected as the optimal form even if Parse ə were positioned in that spot Placing it above *μ ə, on the other hand, gives rise to the MF pronunciation [la pətitə] Thus [la pətit] would be excluded from SF Note further that obligatorily realized schwas illustrated in (4) can be explained by restricting Parse ə to the same spot for [la pətit]

Although these constraints work for the word *petite*, they are by no means sufficient to account for all unrealized schwas in the initial syllable Words such *as rajouter* require several additional constraints In both SF and MF *rajouter* is realized without a schwa It is thus important to note that *μ ə must be dominated by some other constraints Without other constraints dominating *μ ə it would falsely be predicted that in MF [rəʒute] is the correct pronunciation The ill-formedness of *[rəʒute] indicates that Onset must be ranked above *μ ə In addition to Onset we need at least four other constraints to rule out other possible output forms This is illustrated in the following tableau

(12) Onset, Fill Seg, Parse V >> *μ ə , Align Lex L , Syl L, Align Lex L, PrW L >> Parse ə, *Gap

rajouter [raʒute] 'add'

/rəaʒute/	Onset	Fill Seg	Parse V	*μə	LexL, σ L	Lex L, ω L	Parse ə	*Gap
a ☞[r<ə>a ʒu te]$_{\omega}$					*	*	*	*
b [r<ə> a ʒu te]$_{\omega}$	*!				*	*	*	
c [rə [a ʒu te]$_{\omega}$]$_{\omega}$	*!			*				
d [rə <a>[ʒu te]$_{\omega}$]$_{\omega}$			*!	*	*	*		
e [rə [Ta ʒu te]$_{\omega}$]$_{\omega}$		*!		*	*	*		

These new constraints are defined as follows

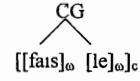
(13) a Onset Syllables must have an onset
b Fill Seg No segments can be inserted
c Parse V Fully specified vowels must be parsed

There are a number of things to be noted First, *Fill Seg and Parse V ensure that no epenthesis and deletion occur in the output forms Second, the position between the Parse V and *μ ə is the upper limit for parse ə Setting the upper limit for the positioning of Parse ə ensures that the same pronunciation [raʒute] is obtained for both SF and MF

4 The Imperative

Nespor and Vogel 1986 156 consider that the clitic group is relevant for stress assignment in French They show that the rightmost prosodic word of the CG is assigned stress This predicts that the rightmost element of the CG serves as a prosodic word regardless of whether it is a lexical word or a function word The representation in (14) indicates that the clitic object *le* has the status of a prosodic word

(14)



In this representation the clitic is interpreted as a prosodic word and thus receives stress The question of how function words such as clitics can be interpreted as prosodic words is an interesting one Selkirk 1995 456 observes that the maximal projection of a lexical word defines the alignment of phrasal level prosodic structures The alignment of the CG with the prosodic word at the right edge in (14) requires the following constraints as a necessary condition

(15) a Align XP R, CG R
b Align CG R, PrWd R
c Align PrWd, Lex R

(15) a and b require respectively that the right edge of a maximally projected phrase be aligned with the right edge of a clitic group and that the right edge of a clitic group be located at the right edge of a prosodic word (15) c shows that the interpretation of function words as a prosodic word does not come for free

Another thing to note is that we need *Rec, stress-related constraints, and a faithfulness constraint to ensure the correct output

(16) a *Rec Recursive structures are banned (Selkirk 1995)
b Stress Final Foot (SFF) The final foot within a clitic group receives stress
c *Stressed ə (*Str ə) Schwa does not bear stress (Urbanczyk 1995 510)
d Fill Feat No features can be added

These constraints ranked as in the following tableau will give rise to the correct output form

(17) Align XP R, CG R, Align CG R, PrW R >> SFF, *Str ə >> *μ ə >> *Rec, Align PrW R, Lex R >> Parse ə, NoCoda >> Fill Feat

Fais-le [fɛ lø] 'Do it'

/fɛ lə/	VP R, CG R	CG R, ω R	SFF	*Str ə	*μə	*Rec	ω R, Lex R	Parse ə	No Coda	Fill Feat
a [[fɛ]ω[lə]ω]c				*!	*		*			
b ☞ [[fɛ]ω[lə́]ω]c							*			***
c [[[f ɛ]ω lə́]ω]c				*!	*	*	*			
d [[fɛ́ l]ω]c<ə>							*	*!		
e [[fɛ́ lə]ω]c					*!		*			
f [[fɛ́l]ω]c<ə>							*	*!	*	

This ranking of constraints restricts stress to the final full vowel of a prosodic word at the right edge of the clitic group Since the schwa of *le* is the only vowel for the rightmost prosodic word, it appears as a full vowel Note in passing that in order to obtain the vowel [ø], two place features [cor], [lab], and one aperture feature [-open3] must be added

5 Subject Clitic Pronoun *je*

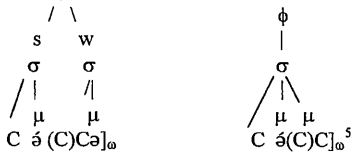
In contrast to imperatives in which object clitic pronouns have the status of a prosodic word the subject clitic pronoun is incorporated in the verb stem In order to account for this asymmetry I propose Host This requires that clitics be attached to a host Having host undominated together with Align VP R, CG R in the constraint hierarchy will require that the subject *je* be inside the verb stem Thus the following configurations are ruled out

(18) [[[parle]ω ʒe]ω]c [[parle]ω [ʒe]ω]c [[parle]ω]c [[ʒe]ω]c [[parle]ω ʒe]c

Note that the subject clitic *je* is not part of the VP, it has to be outside the CG Since Host, in turn, bans the occurrence of the subject clitic as an independent clitic group on its own, the only possible niche for *je* is inside the verb stem

It is also important to note that the stem-final schwa surfaces as [ɛ] The contexts responsible for this change in vowel quality are described as follows

(19) a * b *



[5] (19) a indicates that the stressed branch of the trochaic foot disallows a schwa as the nucleus of that syllable while in b schwa cannot occur in a closed syllable The assumption that schwa lacks place features easily accounts for their ill-formedness In order to form a trochaic foot the stressed branch of the trochaic foot cannot have a syllable with a placeless vowel A similar explanation is available for (b) as well Assuming that codas are moraic in French will make it easier to understand why (19) b is impossible Its ill-formedness should be taken to mean that schwa, being placeless, does not have enough weight to surface in a stressed bimoraic structure In both (19) a and b schwa changes to [ɛ] upon receiving the features [cor] and [+open3]

This vowel quality change is due to another constraint I call Mid Open as well It is roughly defined as follows

(20) MidOpen * V Cə]$_{\omega}$, * VC]$_{\omega}$ *V [lab] [dor] [-open3]

This indicates that V cannot have [lab] [dor] and [-open3] in the environments (19) a and b Note that this constraint does not rule out these vowels in such environments It simply blocks generation of /o/, /ø/, and /œ/ in the output These vowels in the input can be parsed by having parse Feat undominated For convenience I lump together the environments for MidOpen and use it as CSA

(21) Align XP R, CG R, Host >> SFF >> CSA, *μ ə >> *Rec, Align PrWd R, Lex R >> Parse ə, NoCoda >> Fill Feat

parlé-je? [parlɛʒ] 1 sg pres ind interrog 'Do I speak'[6]

/parlə ʒə /	VPR, CG R	Host	SFF	CSA	*μə	*Rec	ωR, Lex R	Pars e ə	No Coda	Fill Feat
a ☞[[par lé͡ʒ]$_{\omega}$]$_{c}$<ə>							*	*	**	*
b [[par͡lə]$_{\omega}$ʒǿ]$_{\omega}$]$_{c}$	*!				*	*	*		*	*
c [[parl]$_{\omega}$<ə>ʒǿ]$_{\omega}$]$_{c}$	*!					*	**	*	**	*
d [[par͡lə]$_{\omega}$ [ʒǿ]$_{\omega}$]$_{c}$	*!				*		*		*	*
e [[par lé͡ʒə]$_{\omega}$]$_{c}$					*!		*		*	*
f [[par lɛ́͡ʒə]$_{\omega}$]$_{c}$				*!	*		*		*	*
g [[pár͡lə]$_{\omega}$]$_{c}$[[ʒǿ]$_{\omega}$]$_{c}$		*!			*		*		*	*
h [[par͡lə]$_{\omega}$ʒǿ]$_{c}$	*!				*				*	*

Note that even if Parse ə is positioned between *μ ə and *Rec, the same output form will be selected as the optimal form Moving it to the spot between SFF and CSA, on the other hand, will yield the MF pronunciation e as the optimal output In the next section we will look over future and conditional tense forms displaying the Closed Syllable Adjustment

[6] Actually for some speakers the vowel is [e] Morin 1978 123 analyses /-e-je/ as either a suffix [-ež] or a sequence of two suffixes /-e + ž/ whereas Morin 1988 144-45 considers it to be an enclitic Since Modern SF disallows the occurrence of [e] in the environments depicted in (19), I suspect that this might be due to a different prosodization For lack of space I will not pursue this possibility in this paper

6 Future and Conditional Tenses

The most puzzling thing about future and conditional tenses is that Closed Syllable Adjustment occurs even though there is no triggering environment This suggests that a rule-based analysis might have the advantage of accounting for the ə ~ ɛ alternation In this section I argue that unmarked singular present indicative -er verb stems serve as the bases for the future and conditional verb forms that exhibit the Closed Syllable Adjustment

As we have seen in the previous section, Closed Syllable Adjustment occurs in the environments (19) a and b Verbs such as *acheter* exhibit the Closed Syllable Adjustment only in the present indicative singular and the third person plural forms This is due to different prosodizations The selection of the optimal form for *achetons* is illustrated in the following tableau

(22) * μ ə, Son >> Trə >> Parse ə, *Gap, NoCoda

achetons [aʃtõ] 1 pl pres ind 'we buy'

/aʃət + õ /	*μə	Son	Trə	Parse ə	*Gap	NoCoda
a a͡ʃə tõ	*!					
b ☞aʃ <ə>tõ				*		*
c a ʃ<ə>tõ		*!		*	*	
d a ʃə tõ	*!		*			

The verb root /aʃət/ does not constitute a domain for syllabification on its own The first person plural indicative tense vowel is added to create a domain for syllabification The syllabification does not create an environment for the Closed Syllable Adjustment The root-final [t] is syllabified with the vowel of the suffix In (23), by contrast, the stem satisfies the condition for the Closed Syllable Adjustment

(23) CSA, *μə >> Parse ə, Gap, NoCoda >> Fill Feat

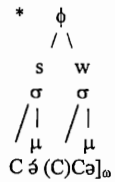
achète [aʃɛt] 'buy(s)' (1, 3 sg pres ind)

/aʃət + ə /	CSA	*μə	Parse ə	*Gap	NoCoda	Fill Feat
a ☞a ʃɛt<ə>			*		*	**
b a ʃɛ͡tə		*!				**
c a͡ʃət<ə>	*!	*	*		*	
d a ʃœ͡t ə	*!	*				***
e a ʃœ t<ə>	*!		*		*	***
f aʃ<ə>t<ə>			**	*!	**	

As seen, the addition of theme vowel -ə meets the condition for the Closed Syllable Adjustment Thus the optimal output form is a with the vowel realized as [ɛ] It has to be noted that in order for GEN to create the adjusted vowel [ɛ], two features [cor] and [+open3] must be added This is indicated by two violations of Fill Feat It should be noted in passing that d, and e have three violations of Fill Feat since an another feature [lab] is added for the lip rounding

The problem with the Closed Syllable Adjustment is that it occurs in the future and conditional verb forms without meeting the condition for it Normally the alternation of /ə/ with [ɛ] is triggered by the environments depicted by (19) a and b repeated here as (24) a and b

(24) a



b

In (24) a the trochaic foot formed by the two consecutive syllables violates *Stress ə and Tr ə It seems to be the case that the Closed Syllable adjustment is a strategy to avoid these structures These environments are not necessarily found in the future and conditional tenses For instance, the most prestigious pronunciation of *achèterait* is [a ʃɛ trɛ] Since the root final consonant forms an onset with the liquid [r], there is no conditioning environment for the Closed Syllable Adjustment There seems to be no remedy for this unexpected occurrence of the Closed Syllable Adjustment In order for such pronunciations to be possible, the second syllable would have to be closed initially or form a trochaic foot with the third syllable, and then the root final consonant [t] would have to be shifted to the following syllable Under a rule based analysis, the correct derivation would be roughly described as follows

(25)

	/ aʃət + ə + rɛ/
Circumscription	aʃət (rɛ)
Syllabification	a ʃə tə (rɛ)
Trochaic Foot Formation	a ʃə͡tə (rɛ)
Closed Syllable Adjustment	a ʃɛ͡tə (rɛ)
Schwa Deletion	a ʃɛt (rɛ)
Resyllabification	a ʃɛ trɛ

Since there is no triggering environment present in the optimal output form, this derivational analysis appears to be the better solution In order to circumvent this problem I adopt Base-Identity constraint proposed by Kenstowicz 1995 He gives the following definition of B-I constraint

(26) Base-Identity Given an input structure [X Y] output candidates are evaluated for how well they match [X] and [Y] if the latter occur as independent words (Kenstowicz 1995 8)

Thus the output forms are evaluated in comparison with the Base Form *achète* [aʃɛt] The whole selection process is demonstrated in the following tableau Note that without the constraint B-I, the optimal output form would be c [aʃ <ə>t<ə>rɛ]ω Morin 1988 152-53 points out that such forms have been attested since the eighteenth century and that they are commonly used in all social classes today I would assume that for such speakers B-I is either absent or positioned way down the hierarchy

(27) B-I >> CSA, *μ ə, Son >> *Rec >> Parse ə >> Fill Feat

achèterait [aʃɛtrɛ] 'would buy' (3 sg cond)

[a ʃɛt<ə>] /aʃət +ə + rɛ/	B-I	CSA	*μə	Son	*Rec	Parse ə	Fill Feat
a ☞[a ʃɛ t<ə>rɛ]ω		*				*	**
b [[a ʃɛ͡tə]ωrɛ]ω	*!		*		*!		**
c [aʃ <ə>t<ə>rɛ]ω	*!					**	
d [a ʃ<ə>t<ə>rɛ]ω	*!			*		**	
e [[a ʃə͡tə]ωrɛ]ω	*!	*	**		*		
f [[aʃ <ə>tə]ωrɛ]ω	*!		*		*	*	
g [[a ʃ<ə>tə]ωrɛ]ω	*!		*		*	*	
h [[a͡ʃət]ω<ə>rɛ]ω	*!	*	*		*	*	
ı [a͡ʃə t<ə>rɛ]ω	*!		*			*	

Summary

We have examined the ə ~ zero and ə/zero ~ ɛ alternations The entire constraint hierarchy can be given below

(28) Align XP R, CG R, Align CG R PrWd R, Host >> B-I >> Onset, Fill Seg >> SFF, *Str ə >> CSA, *μ ə, Son, Align Lex L, Syl L, Align Lex L, PrWd L >> *Rec, Align PrWd R, Lex R >> Tr ə >> Parse ə, *Gap, NoCoda >> Fill Feat

At first sight the whole hierarchy looks very complicated Since the rule component is eliminated under the OT framework, it seems inevitable that constraints bear a huge burden in its stead The basic ranking pattern can be described as follows

(29) Phrasal Alignment R >> Onset, Faithful >> Syllable-based, Align Lex L >> Prosodic Domination, Align PrWd R >> Tr ə >> Parse ə, NoCoda >> Fill Feat

There are number of things worth noting First, the obligatory deletion of schwa in the final contexts in SF is reflected in the separation of NoCoda from the other syllable-based constraints

A second thing to note is that different rankings of Parse ə can account for optional schwa realization in the initial contexts, its obligatory realization in MF, and lexically determined schwa realization Thus there are two other possible rankings

(30) a Phrasal Alignment >> Onset, Faithful >> *Parse ə* >> Syllable-based, Align Lex L >> Prosodic Domination, Align PrWd R >> Tr ə >> NoCoda >> Fill Feat

b Phrasal Alignment >> *Parse ə* >> Syllable-based, Align Lex L >> Prosodic Domination, Align PrWd R >> Tr ə >> NoCoda >> Fill Feat

(29) and (30) a are the rankings for unrealized schwas and realized schwas in the initial syllable in SF respectively (30) b, on the other hand, accounts for basically obligatory realization of schwas in MF We should also note that there is an upper limit for Parse ə It cannot be moved beyond the position in (30) b

Third, Onset is ranked with faithfulness constraints above Align Lex L, Prwd L This indicates that the absence of an onset is avoided at the expense of wiping out the left word boundary if it is avoidable Note further that Align Lex L is ranked higher than Align PrWd R This captures the fact that a violation of right alignment is tolerated in French as opposed to the alignment of the left edge with a prosodic category

Conclusion

In this paper we have seen that schwa realization patterns can follow from interaction of mostly alignment, syllable-based constraints and faithfulness constraints In the first section, we examined the identity of schwa Central to my analysis is the assumption that schwa is a placeless vowel This assumption can nicely account for the vowel quality change known as the Closed Syllable Adjustment The ə/zero ~ ɛ alternation follows from the assumption that schwa cannot occur in the stressed syllable of a trochaic foot and a stressed bimoraic structure due to its lack of place features Note further that this assumption, in turn, is partly based on the view that codas are moraic in French

In Section 2 and 3, we saw the nonrealization of schwa in the final contexts and its optional surfacing in the initial syllable, respectively In order to account for the asymmetry between the obligatory deletion of schwa in the final contexts and its optional deletion in the initial contexts, I ranked NoCoda below other syllable-based constraints I showed that by moving Parse ə up the hierarchy, realized schwas in the initial syllable and unrealized schwas in word-final position can be accounted for We also noted that positioning parse ə between the third and the fourth groups of constrains in (28) yields the output forms attested in MF In section (4), we accounted for the stressed object clitic pronouns by requiring that the rightmost constituent in a clitic group be assigned the status of a prosodic word In section (5) we saw how the subject clitic *je* is incorporated into the verb stem Section (6) dealt with the Closed Syllable Adjustment and its lack of triggering environments I adopted the B-I constraint to circumvent this intractable problem

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