French liaison and elision revisited: A unified account within Optimality Theory*

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1. Introduction

This paper reconsiders French liaison and elision within the new framework of Optimality Theory (Prince & Smolensky 1993; McCarthy & Prince 1993a,b). The goal of this reexamination is to show that OT's constraint-based approach can bring together under the same explanatory umbrella three important sets of liaison/elision phenomena that are handled less generally within traditional rule-based treatments.

Succinctly put, liaison refers to the pronunciation of otherwise silent word-final consonants before vowel-initial words, while elision refers to the phonetic absence of otherwise pronounced final vowels before vowel-initial words. Liaison is illustrated in (1a), with the pronunciation of the [z] in les amis, versus its absence in les tamis. Elision is illustrated in (1b), with the absence of the [Ï] in l'ami, versus its presence in le tamis.

(1) a. les [le]: les amis [le**z**ami] vs les tamis [letami] 'the friends'/'the sieves'

b. le [lÏ]: l'ami [lami] vs le tamis [l**Ï**tami] 'the friend'/'the sieve'

My first objective (Section 3) is to show that liaison and elision are functionally related phenomena best understood as output-driven, rather than process-driven. The central idea is that linking consonants and eliding vowels enter into liaison and elision, respectively, for one and the same reason, namely to yield a better output in terms of syllable structure, specifically with respect to ONSET satisfaction. This analysis revives the general concept, first proposed in the late sixties and then abandoned, of a formal connection between the two phenomena.[1]

The data in (2) illustrate the fact that some vowel-initial words, known as h-aspirŽ words, are exceptions to both liaison and elision.

(2) a.	hibou	[ibu]		(vowel-initial word)	'owl'
b.	les hiboux	[leibu]	*[le**z**ibu]	(no liaison)	'the owls'
c.	le hibou	[l**Ï**ibu]	*[libu]	(no elision)	'the owl'

My second objective (Section 4) is to show that the difference in liaison and elision behavior between regular vowel-initial words and h-aspirŽ words boils down to different demands on the ALIGNMENT of morphological structures with phonological structures. This perspective translates within OT the idea suggested in previous work that h-aspirŽ words are syllable islands (e.g. Tranel 1992, 1993a), and it correctly maintains that h-aspirŽ words lexically begin in a vowel rather than some abstract consonant or special onset, as often proposed in the past (e.g. Selkirk & Vergnaud 1973, Clements & Keyser 1983).

The data in (3) represent a sample of the suppletion effects connected to liaison and elision. (3a) illustrates the standard gender-regulated distribution of the demonstrative adjectives mon/ma. (3b) reveals that suppletion occurs with feminine vowel-initial words: masculine mon (with the linking consonant /n/ pronounced) is used instead of feminine ma. (3c) shows that the suppletion effect disappears with h-aspirŽ words.

(3) a. masculine mon tableau vs feminine ma table 'my painting'/'my table'

b. masculine mon arbre and feminine **mon arme**, not *ma arme 'my tree'/'my weapon'

c. masculine mon hibou vs feminine ma hache, not ***mon hache** 'my owl'/'my axe'

My third goal (Section 5) is to show that the principles that explain regular cases of liaison and elision also explain allomorph distributions in suppletion cases (the observational generalization is that both cases always involve surface allomorphs ending in consonants rather than vowels). Given the existence of suppletion, previous accounts have had to stipulate (i) which form is suppletive, and (ii) when exactly it should be used, in complete disconnection with the treatment of regular liaison (e.g. replace the feminine form ma with the masculine form mon before feminine vowel-initial words, but not before feminine h-aspirŽ words). I will argue that within OT, such effects can receive a naturally integrated and explanatory treatment by showing (i) that suppletion sets can be defined more generally, without singling out a particular member as the suppletive form, and (ii) that the correct allomorph distributions follow from the independently needed Constraint Hierarchy, without special stipulations.

2. Theoretical assumptions

2.1. Framework

As mentioned at the outset, my theoretical framework here will be Optimality Theory (see in particular Prince & Smolensky 1993; McCarthy & Prince 1993a,b; McCarthy 1993). This framework is conceptually

simple. Universal Grammar provides a set of constraints. Cross-linguistic variations mainly arise from the way in which these constraints are ranked in individual languages. The phonology of a language is thus basically reduced to its particular Constraint Hierarchy, i.e. the dominance relations it stipulates among the universal constraints. The grammar itself functions as follows. Inputs, i.e. underlying representations, are relatively freely parsed into sets of output candidates. The Constraint Hierarchy compares these contenders and selects as the grammatical output the optimal candidate. The optimal candidate is the one that best-satisfies the Constraint Hierarchy. Better satisfaction is achieved by a given candidate A over another candidate B if B incurs a higher violation than A along the Constraint Hierarchy. It is important to keep in mind that in this framework, it is possible, and in fact commonplace, for an optimal candidate to violate constraints. The only requirement for a candidate to be optimal is that it be the minimal violator in the candidate set.

2.2. Floaters

I integrate into OT the notion of 'floating melody' familiar from nonlinear phonology. I assume that eliding vowels and linking consonants in French are underlyingly floating (Tranel 1987a; 1992, 1993a,b). As opposed to fixed segments, 'floaters' have in some sense incomplete phonological representations. For present purposes, a precise implementation of this defectiveness is not crucial. All that matters is that floaters lack some higher structural node, be it a root node (as proposed by Zoll 1993), or a prosodic position (no timing slot or no mora; cf. Tranel 1992, 1993a,b). The basic idea is that contrary to fixed segments, floaters are not normally integrated into prosodic structure (hence the absence effect), unless otherwise driven under certain circumstances, in which case they acquire the originally missing higher structural node (hence the presence effect). To incorporate this idea within OT, I regulate the appearance of floaters by introducing the universal constraint AIF (Avoid Integrating Floaters). The force of AIF is to prohibit the 'insertion' of whatever higher structural node would turn a floater into a regular segment. AIF thus belongs to the group of FAITHFULNESS constraints which includes PARSE and FILL. In this paper, I take PARSE to ban the 'deletion' of fixed segments, and FILL to ban 'total epenthesis'. AIF can be seen as banning a type of 'partial epenthesis' whereby a higher structural node would be 'inserted'. Thus, while a FILL violation is necessarily an AIF violation, the reverse is not true.[2]

3. Liaison and elision

The basic data on liaison and elision, as well as a few other pertinent facts, are given in (4) through (7). My representations respect the standard orthography, except for the relevant final segments. Column (a) provides underlying representations (UR) for the words whose final segments are at stake; in (4) and (5), the final segments are floaters and are given in parentheses; in (6) and (7), the final segments are fixed. What happens to underlying final segments in phonetic representations (PR) is shown in the other three columns, before vowel-initial words in Column (b), before consonant-initial words in Column (c), and at the pause in Column (d); these segments are given in bold if pronounced and are omitted if silent.

		'Underlying Representations'		'Phonetic Representations' (abbŽ 'abbot', curŽ 'priest')		
		(a)		(b) --- V	(c) --- C	(d) --- //
Liaison	(4)	peti(t)	'small'	peti**t** abbŽ	peti curŽ	peti
Elision	(5)	l(Ï)	'the'	l'abbŽ	l**Ï** curŽ	l**Ï**
Other facts	(6)	joli	'pretty'	jol**i** abbŽ	jol**i** curŽ	jol**i**
	(7)	honn• t	'honest'	honn• **t** abbŽ	honn• **t** curŽ	honn• **t**

Listed in (8) are the main constraints relevant to the analysis, with brief informal definitions for each, and in (9) their required rankings, which will be justified as we proceed (constraints within curly brackets are not ranked).

(8) Main relevant constraints and informal definitions:

PARSE: Avoid deleting segments

FILL: Avoid inserting segments (FILL-ONSET + FILL-NUCLEUS)

AIF: Avoid integrating floaters

ONSET: Syllables must have an onset

(9) Constraint rankings:

{PARSE, FILL} >> ONSET >> AIF

Consider first the combination of petit and abbŽ, which must yield the liaison form in (4b), peti.tabbŽ (periods show relevant syllable divisions). The most plausible candidates are given in the Constraint Tableau in (10) (In this and other tableaux, the column 'Status' has no theoretical significance; it simply registers what is

grammatical with a check mark, and what is not with a cross. The asterisks in the various constraint columns are violation marks. An exclamation mark after an asterisk points to the fatal violation for a non-optimal candidate. I also adopt the convention of not showing floaters in the candidates where they are not phonetically realized).

(10) Input: /peti(t) abbŽ/

Candidates	Status	{PARSE	FILL}	ONSET	AIF
a. peti.tabbŽ	Ã				*
b. peti.abbŽ				*!	
c. petit.abbŽ				*!	*
d. peti.¯ abbÞ			*!		
e. pe.t<i>abbŽ		*!			
f. peti.<a>bbŽ		*!			

The two most obvious contenders here are the correct peti.tabbŽ (with liaison) in (10a) and the ungrammatical *peti.abbŽ (without liaison) in (10b). (10a) satisfies ONSET and violates AIF, whereas (10b) violates ONSET and satisfies AIF. Since (10a) is grammatical and (10b) is not, ONSET must dominate AIF. Other potential candidates that must be eliminated include (10c-f) (the symbol *Æ* in (10d) represents a default onset consonant, and the angled brackets in (10e-f) indicate that a fixed segment has not been parsed). The Tableau shows that as long as PARSE and FILL as well as ONSET dominate AIF, these four candidates (10c-f) will be correctly ruled out, because they all violate a higher-ranked constraint than the grammatical (10a). So far, then, we have established the two constraint rankings shown in (11):

(11)
- {PARSE, FILL} >> AIF
- ONSET >> AIF

The combination of petit and curŽ, which must yield the form in (4c), peti.curŽ, indicates that when ONSET is satisfied to begin with, AIF will make the necessary decision between the most relevant candidates. This is shown in the Constraint Tableau in (12), where the correct peti.curŽ in (12a), which does not violate AIF, triumphs over the ungrammatical *petit.curŽ in (12b), which violates AIF. The Constraint Tableau in (13) shows the same principle at work in the selection of the appropriate prepausal form peti in (13a) over the ungrammatical *petit in (13b).[3]

(12) Input: /peti(t) curŽ/

Candidates	Status	{PARSE	FILL}	ONSET	AIF
a. peti.curŽ	Ã				
b. petit.curŽ					*!

(13) Input: /peti(t)/

Candidates	Status	{PARSE	FILL}	ONSET	AIF
a. peti	Ã				
b. petit					*!

The combination of joli and abbŽ, which must yield the form in (6b), joli.abbŽ, indicates that ONSET violations may occur across words. In the Constraint Tableau in (14), the forms (a) and (b) show how such violations are allowed to stand, instead of being avoided through a violation of FILL: FILL dominates ONSET. A comparison of (14a) with (14c-d) similarly shows that PARSE must dominate ONSET (the non-parsing of fixed vowels is not allowed to yield ONSET satisfaction).[4]

(14) Input: /joli abbŽ/

	Status	{PARSE	FILL}	ONSET	AIF
a. joli.abbŽ	Ã			*	
b. joli.¯ abbÞ			*!		
c. jo.l<i>abbŽ		*!			
d. joli.<a>bbŽ		*!			

The constraint rankings justified so far are given in (15):

(15) • {PARSE, FILL} >> AIF

• ONSET >> AIF

• {PARSE, FILL} >> ONSET

They combine into the consolidated Constraint Hierarchy given in (16):

(16) • {PARSE, FILL} >> ONSET >> AIF.

To summarize up to this point, this Constraint Hierarchy guarantees that ONSET is satisfied by the appearance of consonantal floaters (partial epenthesis), rather than by the insertion of a default consonant (total epenthesis) or the deletion of a fixed vowel.

The data in (7c-d), honn• t.curŽ and honn• t., are consistent with this Constraint Hierarchy. This is shown in the Constraint Tableaux in (17) and (18), where the grammatical candidates (17a) and (18a) incur no violation on the relevant constraints, as opposed to the ungrammatical contenders.[5]

(17) Input: /honn• t curŽ/

Candidates	Status	{PARSE	FILL}	ONSET	AIF
a. honn• t.curŽ	Ã				
b. honn• <t>.curŽ		*!			
c. honn• .t<c>urŽ		*!			
d. honn• t‿.curÞ			*!		

(18) Input: /honn• t/

Candidates	Status	{PARSE	FILL}	ONSET	AIF
a. honn• t.	Ã				
b. honn• <t>		*!			
c. honn• tÆ.			*!		

I turn finally to elision, which was illustrated above in (5b) with l'abbŽ.[6] The main contenders here are laid out in the Constraint Tableau in (19). (19a) .labbŽ violates none of the relevant constraints and is clearly the optimal output, as none of the other candidates can do as well, violating not only AIF, but higher-ranked constraints as well.

(19) Input: /l(Ï) abbŽ/

Candidates	Status	{PARSE	FILL}	ONSET	AIF
a. .labbŽ	Ã				
b. lÏ.abbŽ				*!	*
c. lÏ.ÆabbŽ			*!		*
d. lÏ.<a>bbŽ		*!			*

I move on to cases involving le before consonantal-initial words and at the pause, as in lÏ.curŽ and lÏ, the forms given above in (5c-d) and repeated below in (20a) and (21a). To explain why the presence of the schwa is possible here, in violation of AIF, I abstract away from so-called optional schwa deletion, which may yield a good output without the schwa in phrases such as Voici le curŽ 'Here is the priest'.[7] The Constraint Tableaux in (20) and (21) evaluate the most logical candidates for the relevant inputs.

(20) Input: /l(Ï) curŽ /

Candidates	Status	NUCLEUS/V	{PARSE	FILL}	ONSET	AIF
a. lÏ.curŽ	Ã					*
b. .l.curŽ		*!			*	
c. l‾ .curÞ				*!		
d. ‾ l.curÞ				*!		
e. .l<c>urŽ			*!			
f. <l>.curŽ			*!			

(21) Input: /l(Ï)/

Candidates	Status	NUCLEUS/V	{PARSE	FILL}	ONSET	AIF
a. lÏ.	Ã					*
b. .l.		*!			*	
c. lÆ.				*!		
d. Æl.				*!		
e. <l>			*!			

These two tableaux introduce a new constraint, NUCLEUS/V, which serves to render rather informally the fact that in French, nuclei must be filled with vowels rather than consonants (see Prince & Smolensky 1993 for a formal approach). This constraint is never violated in the language, and has consequently been awarded an undominated ranking. What (20) and (21) demonstrate is that the best one can do here is to violate AIF. Any attempt to get rid of this violation results in a more serious violation, namely the violation of a higher-ranked constraint. The AIF violations in the grammatical forms lÏ.curŽ and lÏ can thus be viewed as the least of all evils.

The Constraint Hierarchy established at this point is recapitulated in (22).

(22) NUCLEUS/V >> {PARSE, FILL} >> ONSET >> AIF

This Constraint Hierarchy allows liaison and elision to be explained (a) uniformly and (b) by reference to a universal characterization of preferred syllable structure, without phenomenon-specific or segment-specific processes. The pivotal constraint is ONSET. How ONSET can be satisfied for vowel-initial words is determined by the language-specific rankings of the FAITHFULNESS constraints PARSE, FILL, and AIF relative to ONSET. These rankings dictate that neither the 'deletion' of fixed vowels, nor the 'insertion' of default consonants can be used to yield ONSET satisfaction; only floaters can perform this function.[8]

4. H-aspirŽ words

In this section, I turn to h-aspirŽ words. Their behavior with respect to liaison and elision is illustrated again in (23) and (24) with the word hibou /ibu/. Although vowel-initial, these words trigger neither liaison, nor elision.

	(a) 'UR'	(b) 'PR'	(c) Summary
(23)	peti(t)	peti ibu (*petitibu)	no liaison
(24)	l(Ï)	lÏ ibu (*libu)	no elision

With regular vowel-initial words, liaison and elision create a de-alignment between morphological and prosodic constituents, as diagrammed in (25) (In these and following examples, the vertical line represents the morphological left edge of words, the period the left edge of the relevant syllables).

(25) a. liaison: peti.t|abbŽ

b. elision: .l|abbŽ

As linking consonants or consonants preceding elided vowels fill initial onset positions in the following vowel-initial words, the morphological left edge of these words no longer coincides with the prosodic left edge of a syllable. In other words, regular vowel-initial words allow the prosodic ideal of ONSET satisfaction, which favors the syllabification in (26a) over that in (26b), to obscure the morphological ideal of left-edge alignment with a syllable boundary. This morphological ideal can be expressed within OT by the constraint ALIGN-LEFT given in (27), which states that the left edge of a morphological word should coincide with the left edge of a syllable (cf. McCarthy & Prince 1993a) .

(26) a. V.CV > b. VC.V

(27) ALIGN-LEFT: ALIGN (W, L, $, L)

Referring back to (25), we see that in both liaison and elision, ALIGN-LEFT is violated, while ONSET is satisfied. ALIGN-LEFT must therefore be ranked below ONSET. I would like to propose that what makes h-aspirŽ words stand apart in liaison and elision is that they require the exact opposite ranking, the one given in (28a).[9]

(28) a. ALIGN-LEFT >> ONSET (for h-aspirŽ words)

b. ONSET >> ALIGN-LEFT (otherwise)

In other words, h-aspirŽ words are exceptional among vowel-initial words in French in that they do not allow the morphology/prosody de-alignment caused by liaison and elision.

Let us now examine more closely how this marked ranking (28a), in combination with the already established Constraint Hierarchy (22) repeated in (29), delivers the data in (23)-(24).

(29) NUCLEUS/V >> {PARSE, FILL} >> ONSET >> AIF

Consider first the absence of liaison in the grammatical form peti.|ibu, which appears in (b) in the Constraint Tableau in (30). This tableau shows that the only constraint violated by (30b) is ONSET, and that no other candidate can do better.

(30) Input: /peti(t) ibu/

Candidates	Status	NUCLEUS/V	{PARSE	FILL}	ALIGN-LEFT	ONSET	AIF
a. peti.t|ibu					*!		*
b. peti.|ibu	Ã					*	
c. petit.|ibu						*	*!
d. peti.Æ|ibu				*!	*		
e. pe.t<i>|ibu			*!		*		
f. peti.|<i>bu			*!				

Unlike the grammatical form (30b), the contender in (30a), *peti.t|ibu, satisfies ONSET, but it fatally violates the higher-ranked ALIGN-LEFT. Another incorrect contender, *petit.|ibu, given in (30c), satisfies ALIGN-LEFT and violates ONSET, just like the grammatical form in (30b), but its additional violation of AIF condemns it, since (30b) does not violate AIF. Finally, the incorrect *peti.Æ|ibu in (30d), *pe.t<i>|ibu in (30e), and *peti.|<i>bu in (30f) are rejected because they violate at least one constraint dominating ONSET (namely PARSE, FILL, or ALIGN-LEFT).

Consider next the absence of elision shown in the grammatical form lÏ.|ibu, which appears in (b) in the Constraint Tableau in (31). The highest violation in this grammatical form (31b) is again a violation of ONSET. The other candidates in the Tableau can do no better, as they all violate higher-ranked constraints. Thus, *.l|ibu in

(31a) violates ALIGN-LEFT, *lÏ.Æ|ibu in (31c) violates FILL(ONSET) as well as ALIGN-LEFT, lÏ.|<i>bu in (31d) violates PARSE, *lÆ.|ibu and *Æl.|ibu in (31e-f) violate FILL(NUCLEUS), and finally *.l.|ibu in (31g) violates NUCLEUS/V.[10]

(31) Input: /l(Ï) ibu/

Candidates	Status	NUCLEUS/V	{PARSE	FILL}	ALIGN-LEFT	ONSET	AIF
a. .l|ibu					*!		
b. lÏ.|ibu	Ã					*	*
c. lÏ.Æ|ibu				*!	*		*
d. lÏ.|<i>bu			*!				*
e. lÆ.|ibu				*!		*	
f. Æl.|ibu				*!		*	
g. .l.|ibu		*!				*	

The partial Constraint Hierarchies developed for French so far are recapitulated in (32).

(32) • NUCLEUS/V >> {PARSE, FILL} >> ONSET >> AIF

• (a) ALIGN-LEFT >> ONSET (for h-aspirŽ words)

(b) ONSET >> ALIGN-LEFT (otherwise)

In summary, the exceptional behavior of h-aspirŽ words with respect to liaison and elision falls out from a special alignment requirement.[11] For regular vowel-initial words, ONSET dominates ALIGN-LEFT, which means that these words will sacrifice alignment in order to gain an initial onsetted syllable. For h-aspirŽ words, ALIGN-LEFT dominates ONSET, which means that these words will sacrifice the possibility of an initial onsetted syllable in order to maintain alignment. The special behavior of h-aspirŽ words is thus accounted for by means of two universal constraints ranked in what is for French (albeit not all languages) a marked dominance relation. Importantly, this analysis preserves the view that h-aspirŽ words are lexically vowel-initial, a highly desirable representation to maintain because, as is well known, h-aspirŽ words exhibit a number of properties which become mysterious if they are assumed to begin with anything else.[12]

5. Suppletion

The third and last set of phenomena I would like to consider concerns suppletion. Suppletion in liaison and elision affects four classes of items summarized in (33), and for which the observational generalization to be formally captured is that the suppletive forms are consistently consonant-final.

(33) (i) the possessive adjectives mon/ma, ton/ta, son/sa

(ii) le/la, as definite articles or pronouns

(iii) the demonstrative adjective ce/cet

(iv) a few adjectives (beau/bel 'beautiful'; nouveau/nouvel 'new'; fou/fol 'crazy'; vieux/vieil 'old')

Two distributional types of suppletion are usually distinguished in descriptions of liaison and elision; they are illustrated in (34) and (35) (suppletive forms are in bold; a hyphen after mon marks that the n is pronounced).

(34)	(a) regular words		(b) h-aspirŽ words
	masculine	feminine	feminine
C-initial	mon curŽ	ma table	
	le curŽ	la table	
V-initial	mon-abbŽ	**mon**-arme, *ma arme	ma hache, ***mon**-hache
	l'abbŽ	**l'**arme, *la arme	la hache, ***l'**hache

(35)	(a) regular words		(b) h-aspirŽ words
	masculine	feminine	masculine
C-initial	ce curŽ	cette table	
	beau curŽ	belle table	
V-initial	**cet** abbŽ, *ce abbŽ	cette arme	ce hibou, ***cet** hibou
	bel abbŽ, *beau abbŽ	belle arme	beau hibou, ***bel** hibou

In the first type, shown in (34a) and covering Categories [i] and [ii] in (33), the masculine rather than the feminine forms are used with a following feminine vowel-initial word.[13] In the second type, shown in (35a) and covering Categories [iii] and [iv] in (33), the feminine rather than the masculine forms are used with a following masculine vowel-initial word.[14] As shown in (34b) and (35b), h-aspirŽ words do not abide by these distributions, but remain faithful to their appropriately gendered determiners.

In my analysis, I will depart somewhat from these traditional descriptions by proposing that within each of the four classes identified in (33), there is free suppletion among its members, regardless of gender specification or phonological characteristics. In other words, what is stipulated is simply a suppletion set. By contrast with the traditional approach, none of the members of a suppletion set is labelled as the suppletive item in the group, and the customary suppletion context is consequently not stipulated either. For example, I consider that for the possessive adjective first person singular, both masculine mon and feminine ma are candidates to accompany any following word, whether masculine or feminine, whether consonant-initial or vowel-initial. I take this format to be the most general way to characterize suppletion. I will show that, given the existence of such suppletion sets, the selection of the correct outputs follows from the Constraint Hierarchy. This approach provides a welcome separation between on the one hand what is truly marked about the phenomenon of suppletion (namely, that a morpheme is arbitrarily endowed with more than a single underlying representation) and on the other hand what is governed by principles, even within a suppletive system (namely, the distribution of the multiple phonological representations). To summarize, previous approaches to suppletion required three stipulations: (i) the fact that suppletion occurs, (ii) the identity of the suppletive form, and (iii) the context of its use. My proposal is that only the fact that suppletion occurs need be stipulated; which form is suppletive and the context of its use follow from principles of grammar, in this case the exact same principles that account for regular liaison and elision.

I now proceed with my specific account of the suppletion data presented in (34) and (35). Three constraints and their ranking are particularly important in this analysis and are stated in (36).

(36) ONSET >> GENDER >> AIF

Two of the constraints are the already introduced ONSET and AIF (with ONSET >> AIF). GENDER, the third constraint, stands for GENDER AGREEMENT. The force of GENDER is simply to make a determiner agree in gender with its noun; a violation is incurred if this agreement does not obtain. The ranking ONSET >> GENDER lies at the heart of the explanation proposed here for the suppletion effects. For instance, in the grammatical mon-arme in (34a) vs the ungrammatical *ma arme, lower-ranked GENDER is sacrificed for the benefit of higher-ranked ONSET. The ranking GENDER >> AIF captures the fact that satisfaction of GENDER takes precedence over satisfaction of AIF (hence the grammatical le curŽ in (34a) vs the ungrammatical *la curŽ).

Let us consider all the cases in table form. Tables (37)-(40) differ somewhat in presentation from the usual Constraint Tableaux found in current OT literature and in the rest of this paper, but they include the same information if one keeps in mind the Constraint Hierarchy in (36). In these tables, the evaluations are conducted between the candidates appearing between horizontal lines. 'none' in the column 'violations' indicates that none of the three crucial constraints ONSET, GENDER, or AIF is violated by the corresponding candidate. The name of a constraint in this column means that the corresponding candidate violates the constraint. As usual, an exclamation mark after the name of a constraint indicates a fatal violation, as governed by the ranking in (36).

(37)

suppletive set	noun gender		C/V initial	candidates	violations
mo(n) / ma	masculine	a.	C-initial	mon curŽ	none
				*ma curŽ	GENDER!
		b.	V-initial	mon-abbŽ	AIF
				*ma abbŽ	ONSET! + GENDER
	feminine	c.	C-initial	*mon table	GENDER!
				ma table	none
		d.	V-initial	mon-arme	GENDER + AIF
				*ma arme	ONSET!

(38)

suppletive set	noun gender		C/V initial	candidates	violations
l(e) / la	masculine	a.	C-initial	le curŽ	AIF
				*la curŽ	GENDER!
		b.	V-initial	l'abbŽ	none
				*la abbŽ	ONSET! + GENDER
	feminine	c.	C-initial	*le table	GENDER! + AIF
				la table	none
		d.	V-initial	l'arme	GENDER
				*la arme	ONSET!

(39)

suppletive set	noun gender		C/V initial	candidates	violations
ce / cet[te]	masculine	a.	C-initial	ce curŽ	none
				*cet curŽ	GENDER!
		b.	V-initial	*ce abbŽ	ONSET!

				cet abbŽ	GENDER
	feminine	c.	C-initial	*ce table cette table	GENDER! none
		d.	V-initial	*ce arme cette arme	ONSET! + GENDER none

(40)

suppletive set	noun gender		C/V initial	candidates	violations
beau / bel[le]	masculine	a.	C-initial	beau curŽ *bel curŽ	AIF GENDER!
		b.	V-initial	*beau abbŽ bel abbŽ	ONSET! GENDER
	feminine	c.	C-initial	*beau table belle table	GENDER! none
		d.	V-initial	*beau arme belle arme	ONSET! + GENDER none

Taken together, Tables (37)-(40) show the following. In cases not involving liaison or elision, that is with consonant-initial words [all the (a) and (c) examples], higher-ranked ONSET is inherently satisfied, and GENDER becomes the determining constraint, automatically forcing masculine determiners with masculine nouns (mon curŽ, le curŽ, ce curŽ, beau curŽ) and feminine determiners with feminine nouns (ma table, la table, cette table, belle table). Any violation of GENDER is fatal (*ma curŽ, *la curŽ, *cet curŽ, *bel curŽ, *mon table, *le table, *ce table, *beau table).

The more interesting cases are vowel-initial words [all the (b) and (d) examples], for which ONSET satisfaction is not inherent. The ranking of ONSET above GENDER is what allows for violations of GENDER when such violations contribute to the satisfaction of ONSET. This situation occurs both with feminine nouns in (37d) and (38d) (mon-arme > *ma arme, l'arme > *la arme) and with masculine nouns in (39b) and (40b) (cet abbŽ > *ce abbŽ, bel abbŽ > *beau abbŽ).[15]

Why suppletion does not occur with h-aspirŽ words is illustrated in Table (41) below. With h-aspirŽ words, the ranking of ALIGN-LEFT above ONSET basically neutralizes the effect of ONSET, as candidates must violate ONSET in order to have a chance to be optimal (recall that a violation of ONSET allows them to satisfy higher-ranked ALIGN-LEFT). Thus, as shown in (41), the choice between candidates within each set is handed

over to GENDER, the next constraint down in the Constraint Hierarchy. Under the analysis proposed in this paper, the well-known parallelism in liaison and elision behavior between h-aspirŽ words and consonant-initial words boils down to the fact that in both classes of words, ONSET is neutralized as a deciding constraint. But the neutralization of ONSET is itself due to opposite properties in each case: ONSET is always violated with h-aspirŽ words, but never violated with consonant-initial words.

(41)

suppletive sets	noun gender	C/V initial		candidates	violations
mo(n) / ma	feminine	V-initial	a.	ma hache	ONSET
				*mon hache	ONSET + GENDER!
l(e) / la	feminine	V-initial	b.	la hache	ONSET
				*le hache	ONSET + GENDER! + AIF
ce / cet[te]	masculine	V-initial	c.	ce hibou	ONSET
				*cet hibou	ONSET + GENDER!
beau / bel[le]	masculine	V-initial	d.	beau hibou	ONSET
				*bel hibou	ONSET + GENDER!

In summary, rule-based accounts of liaison and elision have generally failed to offer a true analysis of suppletion cases, forced as they were by the framework to spell out allomorph distributions in arbitrary fashion. OT offers the possibility of a formal explanatory treatment. The only required stipulation (needed in any theory) is simply that suppletion exists, i.e. that a given morpheme has more than one underlying form. The availability of several underlying forms for a given morpheme augments the list of faithful candidates to be considered in the evaluation procedure, but as usual within OT, the Constraint Hierarchy will select as output the optimal candidate in this list. Given the existence of suppletion, then, the specific uses of the members of the suppletion team fall out from the Constraint Hierarchy. Suppletive and non-suppletive cases of liaison and elision are thus unified under OT, whereas previous approaches handled them in complete disconnection.

6. Conclusion

In this paper, I hope to have made plausible the attractive possibility offered by the framework of Optimality Theory to provide a functionally unified account of liaison and elision in French, a satisfactory

explanation of exceptions to liaison and elision, and an integrated treatment of regular and suppletive cases of liaison and elision.

Notes

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[1] The formal connection proposed in the late sixties in work by Schane 1968, Chomsky & Halle 1968, and Bailey & Milner (see Milner 1973), and later reintroduced via a footnote by Kaye & Lowenstamm (1984: 154), was rule-based. What was conflated then was not elision and liaison per se, but rather elision and the reverse of liaison, i.e. vowel truncation and consonant truncation. The basic generalization was that across words the first of two segments of like syllabicity deletes. This proposal originally served to motivate in one fell swoop the alpha notation and the feature [syllabic]. Subsequent research in the early seventies, especially by Dell 1970, Selkirk 1972, and Schane himself 1974, argued convincingly against this truncation generalization, which among other things had the disadvantage of leaving in the lurch consonant deletion at the pause. To my knowledge, from then on, the two phenomena have been analyzed independently of each other.

[2] The family resemblance between FILL and AIF can be neatly captured within McCarthy's 1993 proposal to replace FILL with a constraint MSEG requiring that 'every segment belong to a morpheme'. Although I will stay with the FILL/AIF terminology in the text, AIF can be integrated into an M-X family of constraints. All that needs to be done is generalize to every phonological element the idea of a penalty for being morphologically homeless. Just like PARSE has come to grow into a family PARSE-X (where X is any element in a prosodic or feature tree), MSEG can be viewed as one member in the family of M-X constraints, with AIF another member of that family (AIF = M-Z, where Z stands for the higher structural nodes referred to at the beginning of Section 2.2).

[3] NOCODA, the constraint prohibiting codas, could equivalently be the decider in (12) and (13) if ranked above AIF. On the possible interaction between NOCODA and AIF, see note 10 below.

[4] Vowel hiatus is broadly tolerated in French, at least across words, as just illustrated, and also between prefix and stem (e.g. anti-atomique). It is also found morpheme-internally (e.g. No‘], prŽau) and between stem

and suffix (e.g. crŽ+er), but with some glide-filled gaps (as in miette, muette, mouette; sci+er, tu+er, secou+er, balayer [balai+er], soyeux [soie+eux]; cf. Tranel 1987a,b).

[5] The symbol Æ in (17d) and (18c) stands for a default vowel. The ungrammaticality of these candidates shows that FILL(NUCLEUS) dominates NOCODA (not shown in these Tableaux).

[6] On 'eliding' la, see Section 5 below and note 13.

[7] I briefly return to optional schwa deletion in note 10 below.

[8] This proposal does not account for 'liaison sans encha”nement' (EncrevŽ 1988), a problematic phenomenon for syllable-based treatments of liaison (Tranel 1992, 1993a,b).

[9] For other cases of lexically-determined ranking reversals, see for instance McCarthy & Prince 1993a (Ulwa), Griffith 1994 (Cambodian), and Sakai 1994 (Japanese).

[10] Another type of candidate should be considered, namely one of the general shape /Vl.|ibu/, where the input provides a preceding fixed vowel against which the /l/ could lean in coda position. The data in (i) indicate that such candidates are ungrammatical (see Tranel (1987a: 858; 1987b: 95) for more refined grammaticality judgements and some consideration of alignment issues).

(i) Voici le hibou a. [vwasi.lÏ.|ibu] b. *[vwasil.|ibu]

(ia-b) are compared in the Constraint Tableau in (ii). Ignoring the parenthesized NOCODA column for now, we see that the ungrammatical (ib) is actually better than the grammatical (ia): like (ia), (ib) violates ONSET, but unlike (ia), it satisfies AIF. As a solution, one might initially assume that (ib) is out because, as opposed to (ia), it violates NOCODA. As the Constraint Tableau in (ii) reveals, NOCODA would have to be ranked above AIF in order to get this outcome.

(ii) Input: /V l(Ï) ibu/

Candidates	Status	NUCLEUS/V	{PARSE	FILL}	ALIGN-LEFT	ONSET	AIF	(NOCODA)
a. V.lÏ.|ibu	Ã					*	*!	
b. Vl.|ibu						*		(*)

The difficulty with such a proposal is that there are cases where the consonant preceding an underlying floating schwa may be syllabified leftward into coda position, namely, when (in the traditional terminology) optional interconsonantal schwa deletion has applied (but see Rialland 1986). The phenomenon is illustrated in (iii).

(iii) Voici le curŽ a. [vwasi.lÏ.kyre] (NOCODA >> AIF)

b. [vwasil.kyre] (AIF >> NOCODA)

The grammaticality of both outputs in (iii) suggests that AIF may be variably ranked with NOCODA. (iiia) results if NOCODA dominates AIF, (iiib) results if AIF dominates NOCODA. Going back to the candidate in (iib), we can now see that its NOCODA violation cannot on its own explain its non-optimality: the possible ranking whereby AIF dominates NOCODA will still incorrectly make (iib) better than (iia). Intuitively, (iib) is not optimal because it incurs both a NOCODA violation and an ONSET violation, which results in the worst possible transsyllabic contact (Clements 1988). But constraints in OT are taken to act independently, rather than in synergy. I leave open here the resolution of this problem.

[11] This proposal directly accounts for the dialects where h-aspirŽ words behave as uniform exceptions to liaison and elision, but not for those where speakers apparently allow at least some words to be exceptions to just one of the two phenomena (Tranel 1992, 1993a).

[12] Like regular vowel-initial words, and unlike consonant-initial words, h-aspirŽ words begin in a vowel phonetically, cannot contain a schwa in their initial syllable, and never reduplicate their first syllable (Tranel 1992, 1993a).

[13] Traditionally, the case of le/la is not treated suppletively; rather, it is assumed that the vowel in la can elide like the vowel in le. Within the analysis considered in this paper, such a tack would mean that the /a/ in la is a floating vowel. I maintain instead that schwa is the only floating vowel in French, therefore that /a/ is a fixed segment in la, and that suppletion in favor of le is at work in apparent cases of /a/-elision.

[14] I do not view as grammatically significant the orthographic differences between the homophonous suppletive and feminine forms (e.g. cet/cette, bel/belle).

[15] Note that I posited a fixed vowel, rather than a floating schwa, in the demonstrative adjective ce. If the vowel in this word were a floater, the ungrammatical * 'abbŽ, which would suffer no violation, would be optimal, in particular better than the correct cet abbŽ, which incurs a GENDER violation. Interestingly, the non-eliding vowel in demonstrative ce contrasts with the vowel in pronominal ce, which does elide (e.g. c'est bien/ce n'est pas bien), and which I take to be a floating schwa. On the other hand, the vowels in both words may so to speak undergo optional interconsonantal deletion (e.g. voici c(e) curŽ, si c(e) n'est pas bien). Thus, there seems to

be a breakdown in the correlation usually assumed between the concept of floating schwa and the possibility of optional interconsonantal vowel deletion. But this correlation is clearly an idealization, as it actually breaks down in other ways: (i) vowels other than schwa (e.g. [u] in ˆ tout ˆ l'heure) may delete interconsonantally (cf. Tranel 1987b: 106); (ii) some schwas (e.g. in peser), so defined because of closed syllable adjustment alternations (cf. p se), cannot delete (see Morin 1988, Tranel 1988).

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