

Alignment Constraints in French

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Recent phonological accounts of liaison (e.g., Booij (1986); Encrevé (1988); Tranel (1994); Tranel (1995) have relied heavily on rules and constraints involving syllable structure. Such an approach potentially meshes well with Selkirk's (1974) study which accounts for the grammatical distribution of liaison in terms of phonological words. However, there is evidence that prosodic constraints are not in fact central to the phonological or distributional properties of liaison. The analysis which I will develop in this paper provides a phonotactic basis for liaison, drawing particularly on the insights of McCarthy & Prince (1993).

1 Enchaînement

Syllabification in French commonly crosses word boundaries, as illustrated in *petite amie* [pə.ti.ta.mi] 'girlfriend'. That is, the final consonant of one word can be syllabified as the onset of the first syllable of a following vowel-initial word. Encrevé (1988) adopts (and generalizes) Delattre's terminology (1966, p 55) in calling this phenomenon 'enchaînement'.¹ Although there are cues for distinguishing word boundaries in some contexts, enchaînement gives rise to many homonymous sequences. For example, the following strings are claimed to be phonetically equivalent (Delattre, 1966, pp 141–142):

- | | | | | |
|-----|---------------------|---|------------------|--------------|
| (1) | avoir de l'atout | ~ | avoir de la toux | [avwardlatu] |
| | 'have a trump card' | | 'have a cough' | |
| | un signe allemand | ~ | un signalement | [ẽsiɲalmã] |
| | 'a German sign' | | 'a description' | |

The coordination of syllable and word edges falls into the category of Alignment effects (McCarthy & Prince, 1993). Thus, consider the following alignment constraint:

¹ Delattre takes 'enchaînement' to cover just those cases where a fixed final consonant is parsed as the onset of a following word; for Encrevé, on the other hand, it covers all cases of syllabification across word boundaries, including liaison.

- (2) ALIGN-LEFT
Align(Stem, L, PrWd, L)

This requires that the left edge of every stem coincide with the start of a prosodic word (PrWd). McCarthy & Prince (1993) point out that by virtue of the Prosodic Hierarchy, ALIGN-LEFT ensures that the left edge of a stem cannot lie properly within a syllable or a foot, since these latter categories are subordinate to PrWd in the hierarchy; in other words, PrWds are composed of complete feet (or syllables), and feet in turn are composed of complete syllables. As a result, ALIGN-LEFT will block syllabification between words. This is illustrated for the Polish phrase *mechanizm obronny* ‘defense mechanism’ in the following tableau (where ‘[’ and ‘]’ indicate PrWd boundaries, and ‘|’ indicates a stem boundary):

- (3) ALIGN-LEFT \gg ONSET (McCarthy & Prince, 1993)

	ALIGN-LEFT	ONSET
a.  [.mechanizm] [obronny]		*
b. [.mechaniz][.m obronny]	*!	

Example (3a) has the stem-edge ‘|’ completely aligned with the PrWd-edge ‘[’; by contrast, in (3b) the syllable *mo* cuts across the left stem-edge of *obronny*, and hence the PrWd-edge is misaligned with the stem-edge, violating ALIGN-LEFT.

Since ALIGN-LEFT appears not even to be minimally satisfied in French, we might assume that it is absent from the language. Nevertheless, there *are* syntactic constraints on prosodic words in French, as Selkirk (1974) and others have pointed out. Rather than excluding ALIGN-LEFT, therefore, we might assign it a formal parameter, as follows:

- (4) ALIGN-LEFT(*X*)
Align(*X*, L, PrWd, L), where *X* belongs to a fixed set of grammatical categories.

While this is a *prima facie* plausible modification of McCarthy and Prince’s constraint, it will not suffice as it stands for defining PrWd in French. We will return to this later.

For the time being, we will just assume that we can find some way of characterising PrWd which allows it to embrace extended sequences of grammatical words. It follows from the Prosodic Hierarchy that syllabification is prohibited across boundaries delimited by *X*, by virtue of some version of ALIGN-LEFT(*X*). However, within prosodic words, ONSET will suffice to ensure that sequences such as *petite amie* are syllabified as [pə.ti.ta.mi], rather than [pə.tit.a.mi].

2 Liaison

2.1 Unmarked Liaison

As is well-known, certain word-final consonants are only phonetically realized when followed by a vowel-initial word; they remain silent when followed by a consonant or a pause. The following table illustrates the difference between the fixed final /t/ in *petite*, versus the liaison /t/ in *petit*:

(5)		Fixed Consonant		Liaison Consonant	
	___V	petite amie 'girlfriend'	[pətitamɪ]	petit ami 'boyfriend'	[pətitamɪ]
	___C	petite fille 'small[FEM] girl'	[pətɪtɪfɪ]	petit garçon 'small[MASC] boy'	[pətɪgarsɔ̃]
	___#	elle est petite 'she is small[FEM]'	[ɛlɛpətɪ]	il est petit 'he is small[MASC]'	[ilɛpətɪ]

Thus, the liaison consonant is present before a vowel, but absent before a following consonant or pause. It is useful to have an orthographic convention for signalling the presence or absence of liaison, and I shall adopt that of Morin & Kaye (1982): *petit t-ami* indicates that *t* is in liaison with *ami*.

Typically, when the liaison consonant surfaces, it provides the onset for the initial syllable of the following word. For example, *petit enfant* is syllabified [pə.ti.tã.fã]. Such a result is to be expected, of course, given our previous remarks about enchaînement.

It is generally accepted (Selkirk, 1974; Morin & Kaye, 1982; Encrevé, 1988) that liaison falls broadly into two classes. First, there is *unmarked* liaison, which appears in all styles of speech, and is obligatory (or at least extremely frequent; cf. (Morin & Kaye, 1982, p 295)). This is to be distinguished from *elevated* liaison, which occurs in the speech of highly educated speakers, and is optional for those speakers.

Unmarked liaison occurs between determiners and nouns, between monosyllabic prepositions and noun phrases, and between clitics and verbs, as illustrated in (6a–c) respectively:

- (6)
- a. [Det N]
des z-ennuis
'troubles'
 - b. [P [Det N]]
dans z-une salle
'in a room'
 - c. NP [clitic V]
Paul nous z-appelle
'Paul is calling us'

2.2 Elevated Liaison Contexts

Selkirk (1974) proposes that sequences consisting of a non-lexical category followed by a major category constitute prosodic words in French,² and this analysis of the domain of unmarked liaison is endorsed by Morin & Kaye (1982). A formal account of PrWd in French might start from the 'end based' account proposed for Shanghai Chinese in Selkirk & Shen (1990). In Shanghai, according to Selkirk & Shen, the left edge of lexical N, V or A always coincides with the beginning of a prosodic word. That is, using the notation of (McCarthy & Prince, 1993), the following constraint holds:

² More precisely, Selkirk spoke of 'phonological words', delimited by boundary symbols.

- (7) ALIGN-LEFT: Shanghai Chinese Prosodic Words (Selkirk & Shen, 1990)
 Align(X , L, PrWd, L), where $X \in \{N^0, V^0, A^0\}$

For French, we clearly want to switch the directional parameter: the *right* edge of lexical N, V or A coincides with the *end* of a prosodic word:

- (8) ALIGN-PRWD: French Prosodic Words
 Align(X , R, PrWd, R) where $X \in \{N^0, V^0, A^0\}$

If we enforce exhaustive parsing of strings into PrWds, then PrWds will extend from the beginning of an utterance up until the right edge of an X , and from there up until the next X (or to the end of the utterance). ALIGN-PRWD will permit cases of liaison of the kind illustrated in (9) (where, as before, PrWds are demarcated by '[' and ']').

- (9) a. [son n-ami][les z-étonne]
 'his friend amazes them'
 b. [ils z-ont][rencontré][un n-ami][dans z-un restaurant]
 'they met a friend at a restaurant'

However, the main thrust of Selkirk (1974) is to accommodate elevated liaison within the same framework as unmarked liaison, by relaxing the rules for demarcating prosodic words. That is, on her approach, a morphologically inflected head N^0 , V^0 or A^0 will also form a prosodic word, and hence a liaison context, with a following XP sister, as shown in the following examples:

- (10) a. (Det) [N PP]
 des rappels z-à l'ordre
 'appeals for order'
 b. (clitic) [V NP]
 ils demandèrent t-un livre
 'they asked for a book'
 c. (NP V) [A PP]
 Elles sont fidèles z-à André

Unfortunately for this analysis, Morin & Kaye (1982) present a number of persuasive arguments that the extension of prosodic word to head-complement structures is not well-motivated for French. In particular, an independent characterization of prosodic words in terms of intonational units — namely, that a prosodic word can bear at most one pitch accent — coincides with the claims of ALIGN-PRWD, but with no extension thereof. For example, both *savants* and *anglais* can have independent pitch accents in (11), even though they are claimed to belong to the same prosodic word by Selkirk.

- (11) (Det) N A
 des savants z-anglais
 'English scientists'

If we accept the contention of Morin & Kaye (1982) that the context for elevated liaison cannot be equated with PrWd, we might then go on to wonder whether the grammar needs any statement of liaison contexts at all. The answer seems to be Yes: there are well-known syntactic configurations where liaison is prohibited for all speakers:

- (12) a. NP VP
 *Les garçons z-enragent
 ‘the boys are furious’
 b. (Det) N XP
 *des rappels z-à l’ordre
 ‘calls to order’
 c. (V) NP XP
 *Donnez ces lunettes z-à Marcel
 ‘Give these glasses to Marcel’

In addition, Morin & Kaye (1982) claim, *contra* Selkirk, that in the data they surveyed, liaison between adjectives and their complements virtually never occurred.

We can conclude this discussion by observing that there is no difficulty in principle in defining a constraint which determines whether two phonological elements belong to an elevated liaison context; but this constraint appears to have no prosodic content. On the other hand, it is plausible that unmarked liaison is unmarked precisely because it is constrained to occur within prosodic words.

3 Liaison without Enchainment

Tranel (1994) presents an elegant account of liaison (and elision) which is driven by the imperative to satisfy ONSET; that is, a liaison consonant surfaces just in case it is able to provide an onset for a following syllable. Unfortunately, this appears to run counter to evidence that liaison consonants are not always syllabified into a following onset. Encrevé (1988) has assembled considerable evidence that in optional liaison, the consonant can appear in a coda; that is, French allows liaison without echaînement. For example, based on acoustic analysis of recorded spoken French, Encrevé claims that both the following realizations are possible:

- (13) J’avais un rêve [ʒa.ve.zẽ.rev], [ʒa.vez.ẽ.rev]
 ‘I was having a dream’

Encrevé’s discussion indicates that when liaison is not accompanied by echaînement, there is either a schwa-filled pause or a glottal stop intervening between the liaison consonant and the following word. Morin & Kaye (1982) provide similar examples in which a liaison consonant occurs before a hesitation pause and an intonation pause:³

- (14) a. sans-z . . . envisager le mariage
 ‘without . . . considering marriage’

³ ‘. . .’ indicates a hesitation pause, and ‘/’ indicates an intonation break. Examples (14a–c) are due to Ågren (1973).

- b. qui est-t . . . un des premiers films
‘which is . . . one of the first movies’
- c. tant-t / au niveau
‘as much / with respect to’
- d. une autre explosion, mais-z / au Danemark
‘another explosion, but / in Denmark’

Given such data, there is clearly a question (as Tranel (1995) himself points out) whether prosodic licensing is fundamental to liaison. It certainly isn’t sufficient to say, as Booij (1986, p 99) does, that liaison is a rule that applies both in ϕ (phonological phrase, equivalent to our use of PrWd) and in I (Intonational Unit, the next larger domain above ϕ). An alternative approach, somewhat in the spirit of (Steriade, 1995), is to condition liaison solely in terms of the phonotactic environment. In place of ONSET, then, we will invoke the following constraint:

- (15) NOHIATUS
Align(Vowel, L, Cons, R)

This requires every vowel to be preceded by a consonant.

On Tranel’s account, linking consonants are ‘floating’, in the sense that their melodic content is not anchored to an x-slot on the skeletal tier. I shall adopt a structurally more impoverished account in which a liaison consonant is just an optional symbol in the lexeme’s phonological entry; that is, the representation of the lexeme PETIT[MASC] is /pəti(t)/. This can be thought of as a constraint which is true of the two strings *pəti* and *pətit*. In effect, the alternation is treated as suppletive, paralleling the alternation between *beau* ~ *bel* ‘beautiful[MASC]’ (Herslund, 1986).

As remarked earlier, the /t/ surfaces before vowels in order to satisfy NOHIATUS. Since there are in fact many occurrences of consecutive vowels in French, FILL must dominate NOHIATUS; i.e., segments are not epenthesized to avoid hiatus.

What prevents the optional /t/ of /peti(t)/ from surfacing before consonants and pauses? I shall adopt the hypothesis that there is a counterpart to NOHIATUS, as follows:

- (16) SALIENT-C
Align(Cons, R, Vowel, L)

That is, every consonant is followed by a vowel (thereby rendering it acoustically salient). The results are exhibited below:⁴

⁴ Since there is no data so far which forces an ordering on this pair of constraints, I will assume for the time being that they are unordered with respect to each other. However, if we allowed ourselves to underparse *petite* (the feminine form with a fixed final consonant) then SALIENT-C would render *pəti(t)* preferable to *pətit* in preconsonantal position. I conclude from this that PARSE must dominate SALIENT-C.

(17) Tableau for *peti(t)* in three environments

	NOHIATUS	SALIENT-C
a.  pətɪt V		
b. pəti V	*	
c. pətɪt C		*
d.  pəti C		
e. pətɪt #		*
f.  pəti #		

Note that the ‘#’ in (17e–f) is assumed to be utterance-final; there is no following segment in the relevant context.

As we saw in section 2.1, syllabification of the liaison consonant as the onset of the following word is preferred, as ONSET requires. However, suppose the word containing the liaison consonant occurs in the context ___# V, i.e., preceding a pause and a vowel-initial word. Assume also that the two words in question belong to a liaison context. Now since the pause necessarily marks the edge of a PrWd, syllabification across the pause will be prohibited:

- (18) ALIGN-#
Align(#, L, PrWd, R)

We then have the following pattern:

(19) ALIGN-# \gg ONSET:

	ALIGN-#	ONSET
a. avez.V		*
b.  ave.zV		
c.  avez.#V		*
d. ave.z#V	*	

In summary, then, the liaison consonant surfaces since the right phonotactic conditions are met. But this liaison occurs without enchaînement, since it is preferable to violate ONSET than ALIGN-#.

There are several important issues that I have had to neglect in this brief paper, particularly the analysis of plural liaison. I hope nevertheless to have shown that the interaction of liaison and enchaînement can be economically treated within an optimality-theoretic account.

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