

Vowel Harmony in Canadian French

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1. Introduction

The paper will present theoretical support to a hypothesis that has been proposed in Poliquin (2003a), namely, that Canadian French (CF) high vowels before voiced fricatives have a tense quality as a result of a phonetic process. Firstly, an overview of the behaviour of CF high vowels will be presented, along with a presentation of vowel harmony as it occurs in this language. Secondly, it will be shown how previous accounts for this allophone fail to make correct predictions concerning vowel harmony, and that these correct predictions follow from the alternate view which I have been defending in previous work.

2. CF High Vowels: Overview

2.1 *The behaviour of phonological phrase-final high vowels*

Canadian French possesses three high vowels: /i/, /y/, /u/. Each vowel has three allophones: tense: [i], [y], [u], lax: [ɪ], [ɥ], [ʊ], and [+ATR]: [i̠], [y̠], and [u̠]. At the end of a phonological phrase (PhP), distribution of the allophones is quite straightforward. In a syllable closed by a voiced fricative (v, z, ʒ) we find the [+ATR] allophone; in a syllable closed by any other consonant, we find the [lax] allophone; in an open syllable, only the [tense] allophone surfaces. The distribution is illustrated in (1):

- (1)[+ATR]: Rɪ̠v 'shore'
 bɥ̠z 'buzzard'
 Ru̠ʒ 'red'
- [lax]: vɪt 'quick'
 bɥʃ 'log'
 suɫ 'drunk (fem.)'
- [tense] vi 'life'
 by 'drunk (participle)'
 su 'drunk (masc.)'

In Poliquin (2003a), it was proposed that the [+ATR] allophone is in fact the [lax] allophone that is co-articulated with the following voiced fricative. Strong evidence from magnetic resonance imaging was used to support the hypothesis. Articulation of voiced fricatives in CF involve advancement of the tongue root, which entails a raising of the tongue body. As advancement of the tongue root begins prior the articulation of the obstruent, raising of the tongue body has a ‘tensing’ effect on the preceding vowel. I will therefore assume that the manifestation of [+ATR] allophones are due to this phonetic process.

2.2 *The behaviour of high vowels in non-final positions*

In non-PhP final positions, only two of the allophones can surface: [tense] and [lax]. Surfacing of the [+ATR] allophones appears to be partially contingent on stress. As final CF syllables are always stressed, the allophone can always surface in this position. When a non-final syllable is closed by a voiced fricative, high nuclei are lax. High nuclei may surface as [+ATR] if the non-final syllable is strongly emphasized, but even in this extreme case, the [+ATR] allophone seems forced. As for the distribution of [tense] and [lax] allophones, the situation is quite complex. Both can surface in closed syllables, which would be

impossible in a PhP-final syllable. A word such as *circuit* ('circuit') can surface in one of two possible ways: [sɪ̃ʀ.kyʁi] or [sɪ̃ʀ.kyʁi]. I will assume that that is the case because stress, like the presence of a coda, is a determining factor in the laxing process. [lax] allophones are different from [+ATR] allophones inasmuch as their presence in this position is not contingent on stylistic stress, and does not seem forced at all. I will not dwell on this issue here. In open non-final syllables, both [tense] and [lax] allophones may also surface. In careful speech, only the [tense] allophone is found, so that a word like *pilule* ('pill') will be pronounced [pĩ.lɥl]. In normal speech however, the [lax] allophone will surface as a result of harmony in [lax]: [pɪ̃.lɥl]. It is this sort of vowel harmony that I will be concerned with. The process is quite productive in normal CF speech, though it is not ubiquitous and inescapable as it is in Turkic languages. Harmony in [lax] is the most regular, though harmony in [round] also exists in some instances, but it is much less productive. The word *minute* ('minute') exhibits both kinds, but I shall only treat the first here:

(2) /minyt/

minyt	laxing
mɪnyɪt	harmony in laxness
mynyt	harmony in rounding

There is no reverse process of harmony in [tense]; as just shown, the first vowel of a word like *circuit* even though the last vowel must be.

In principle, harmony can occur in every such context (open non-final syllables), but in practice, the process is somewhat lexically restricted.

Harmony is certain to occur in commonly used words such as *minute*, but much less certain to occur in a word like *livide* ('livid'). Also, there appears to be restrictions linked to vowel combinations, where harmony is most likely to occur when vowels are most similar (as in *jujube* 'jujube'), and least likely to occur when they are most dissimilar ('usine'). It is my intuition that it is more likely for unrounded high vowels to harmonise to succeeding rounded high vowels than the opposite process; this remains to be confirmed, and is irrelevant for the purposes of this paper. Such considerations are very interesting, but necessitate a very careful corpus study, something that remains to be done.

3. Harmony and the Phonology of [+ATR] Vowels

So far, I have essentially been illustrating the process of harmony in CF, and outlining possible avenues of further research into this phenomenon. Such an introduction is necessary however for getting to the meat of the matter which will be the topic of this section. Essentially, I will show that what we know concerning harmony in CF lends support to the hypothesis proposed in Poliquin (2003a) and other works-in-progress of mine, namely, that so-called ‘lengthened tense vowels’ that surface before voiced fricatives are, in fact, [lax] allophones that are co-articulated with following fricatives, whose articulation necessitates advancement of the tongue root to ensure their proper voicing. The phenomenon is well known, and has been observed in many unrelated languages (e.g. Buchan Scots English, Madurese). A review of this phenomenon and its manifestations in different languages can be found in Vaux (1994). If high vowels preceding voiced fricatives have a tense quality, it is the result of a phonetic effect involving heightening of the body of the tongue as a result of tongue root advancement. However, I maintain that they are underlyingly [lax] at an intermediate level of representation, as all vowels preceding coda consonants otherwise are. We should then expect that [+ATR] vowels behave like [lax] vowels at a

phonological level. More concretely, we should expect them to trigger harmony effects as [lax] vowels do.

Traditional accounts for high vowels before voiced fricatives make the opposite prediction. There exist several such accounts in the literature, Dumas (1978, 1981), Légaré (1978b), McLaughlin (1986), which essentially differ in terms of representation. These slight differences aside, they all account for the distribution of high vowel allophones using two rules arranged in bleeding order: a lengthening rule, and a laxing rule:

(3)a. Lengthening rule: $i, y, u \rightarrow i:, y:, u: / __ [+vce, fric]$

b. Laxing rule: $i, y, u \rightarrow \text{ɪ}, \text{ʏ}, \text{ʊ} / __ C$

The bleeding order of the rules prevents vowels before voiced fricatives to be laxed. Dumas (1976), which is concerned with harmony, states that these rules feed a harmony rule (163). Because only [lax] vowels trigger harmony, it is predicted that a word like *litige* ('litigation'), could only surface as $[li.tɪ^iʒ]$ not as $*[lɪ.tɪ^iʒ]$, as illustrated in (4):

(4)		/li.tiʒ/
	Lengthening	/li.tɪ ⁱ ʒ/
	Laxing	-----
	Harmony	-----
		[li.tɪ ⁱ ʒ]

The prediction is wrong. *Litige* can surface both as [li.tɪⁱʒ] and [lɪ.tɪⁱʒ]. The rules do not explain why the latter representation can surface, and yet it does. If we assume that there is no lengthening rule, and that the manifestation of a [+ATR] final vowel is simply the result of a phonetic process (that may or may not be phonologised), we predict that, at a phonological level, [+ATR] allophones behave like [lax] allophones. Using a rule-based system, we obtain the following derivation:

(5)		/li.tiʒ/
	Laxing	/li.tɪʒ/
	Harmony (optional)	/lɪ.tɪʒ/
	TRA	[lɪ.tɪ ⁱ ʒ]
		[lɪ.tɪ ⁱ ʒ] or [li.tɪ ⁱ ʒ]

Assuming that the presence of [+ATR] allophones is the outcome of a phonetic process yields the correct predictions concerning vowel harmony, whereas the traditional account does not. In Poliquin (2003a), I have provided thorough empirical support for this hypothesis, while the predictions that it makes concerning vowel harmony in CF lends additional theoretical support to a hypothesis that is already firmly grounded.

4. Conclusion

In broad strokes, the paper has presented two mechanisms of CF phonology. Firstly, the distribution of high vowel allophones, and secondly, the process of harmony in laxness. Considering the interaction of the two phenomena, it was shown that consideration of [+ATR] allophones as the outcome of a phonetic process rather than a phonological rule yields correct predictions concerning vowel harmony. Theoretical support was thus lended to a hypothesis already firmly grounded empirically.

References

Dumas, Denis (1976). 'Quebec French High Vowel Harmony: The Progression of a Phonological Rule. In: *Proceedings of the Chicago Linguistic Society*. University of Chicago.

Dumas, Denis (1978). *Phonologie des réductions vocaliques en français québécois*. Doctoral dissertation, Université de Montréal.

Dumas, Denis (1981). 'Structure de la diphtongaison québécoise.' *Canadian Journal of Linguistics/ Revue canadienne de linguistique*, 26:1.

Légaré, Luc (1978b). *Deux règles d'accentuation dans les voyelles hautes du dialecte québécois*. Master's thesis, Université de Montréal.

McLaughlin, Anne (1986). "Une (autre) analyse de la distribution des variantes des voyelles hautes en français montréalais." *Revue québécoise de linguistique théorique et appliquée* 5:4.

Poliquin, Gabriel (to appear 2003a). 'The phonetically determined distribution of ATR high vowels in Canadian French.' in *Proceedings of the 19th Northwest Linguistics Conference*. University of Victoria.

Vaux, Bert (1994). *Armenian Phonology*. Doctoral dissertation, Harvard University.