Right on *q*: Using Q Theory to Capture Phonological Patterning

Introduction. In Q Theory (Inkelas and Shih 2016, 2017), segments ("Q") are represented as a sequence of temporally ordered targets. In general, segments are analysed as having three of these subsegments, labelled *q*, reflecting the presence of onsets, steady states, and offsets, but recent work has suggested that more subsegments are necessary for geminates, while fewer subsegments are motivated for excrescent vowels (*q*) and for reduced flaps (*qq*) (Garvin et al. 2018). In this study, we provide the first full analysis of a vowel system in Q Theory and show that implementing partially underspecified subsegments allows us to capture distributional restrictions, phonological alternations and prosodic behaviours based on the complexity of the subsegmental representation. To do this, we used Laurentian French, as it retains a large number of vowel contrasts (see Figure 1) alongside alternations affecting groups of vowels that do not always seem featurally similar.

Excrescent, Epenthetic and Exceptional Vowels. In Laurentian French can be found three types of vowels that show unusual behaviour. The first is the optional excrescent vowel that occurs strictly as part of articulatory transitions, as for /ɛksprɛ/ *exprès* '(on) purpose' being pronounced [ɛksi̯prɛ]. Following Inkelas's (2019) analysis, we would expect this vowel to be possible to accentuate (ie. assign prominence) in regular speech and likely to count towards the syllable count, but neither is the case in Laurentian French. As such, we analyse the excrescent vowel as being the interpretation of a *consonantal* segment's subsegment, which lacks any feature to render it syllabic or to treat is as a full phonological vowel. Next are epenthetic vowels and the phonological schwa, which differ in that the epenthetic vowel is (a) more clearly not being underlying, and (b) having a contextually predictable realisation rather than an inherent vowel quality. Table 1 illustrates this, where [œ] is the phonological schwa, but [ə] is an epenthetic vowel. Based on these properties and on the phonological schwa seemingly affecting supersegmental cues even when consistently absent (Anonymous 2019), we analyse epenthetic vowels as having an inserted vowel *segment* (hence affecting syllable count for instance) and gaining their *q* features from neighbouring segments, while the phonological schwa has that segment underlyingly and therefore can have feature specifications in its *q*. Given the schwa is so strongly dispreferred in prominence assignment (Anonymous 2019), is so restricted in terms of its allowed phonological environments and deletes so consistently, we assign it only one *q*.

(qq) and (qqq) vowels. Previous work has suggested that the high lax vowels are phonemic in Laurentian French based on phrase-level minimal pairs and on phonological alternations (Anonymous 2018), and more recent evidence on vowels gradiently influencing the rate of retracting the pitch accent from the final syllable to the penult shows that this phonological similarity is reflected through similar preferences in prominence retraction to the penult for the tense non-low vowels and for the lax non-low vowels (Anonymous 2019). However, while these vowels could reasonably share phonological features to reflect the lax vowels being disfavoured in final open syllables and their relative dispreference for accentuation, /a/ is subject to similar constraints and yet cannot readily be described as lax. /a/ increasingly merges into /ɑ/ word-finally and is amongst the least likely vowels to attract prominence (unlike /ɑ/). We therefore analyse the tense series and /ɑ/ as having three *q*s (full vowels) and the lax vowels and /a/ as having two *q*s (light vowels). We infer an active dispreference for full (*qqq*) vowels in final open syllables and a preference for light (*qq*) vowels in final closed syllables, explaining distributional

asymmetries and patterns of laxing (final closed syllables) and tensing (final open syllables) with a single principle, which also predicts the categorical word-final schwa deletion we observe.

(qq.qq) vowels and nasal vowels. Certain vowels in Laurentian French show inherently increased weight, associated with increased rates of attracting the pitch accent (Anonymous 2019). Amongst the oral vowels, the clear case is /ɛː/ (e.g. in /fɛːt/ *fête* 'party'), which is most often diphthongised (Côté 2012) and which is absent word-finally (where long vowels seem to be prohibited, being lost historically). Given the opposition between /e/, /ɛ/ and /ɛː/, we use the geminate specification for these long vowels, making /ɛː/ (*qq.qq*). Nasal vowels also pattern as long, but they differ from the oral vowels in that they undergo fronting (/ɑ̃/) or diphthongisation (/ɛ̃ œ̃ ɔ̃/) in final open syllables and their prominence attraction pattern suggests their syllables act more like closed syllables word-finally (whereas final oral vowels are disfavoured for hosting a pitch accent; Anonymous 2019). We propose that the nasal vowels include a nasal subsegment not specified as vocalic, reflecting their historical origins and explaining the diphthongisation and prominence patterns (unrestricted by syllable shape, unlike for oral vowels).

Discussion. Based on the Laurentian French vowel system, its phonological alternation and cross-linguistic phonological patterns, we motivate subsegmental underspecification, propose parameters to determine weight using Q-Theoretic representations (higher complexity in number of *q*s means greater gradient weight), and finally discuss structure organising subsegments, offering representations for all vowels in Laurentian French. We additionally demonstrate how the above representations can account for other phonological alternations in Laurentian French, for example suggesting that nasal vowels offer the most consistent case of phonological liaison because the floating segment effects are a direct consequence of the underspecified nasal subsegment in their phonological representation, and illustrate that the difference between a pitch accent and a boundary tone can be represented through whether the tone is accompanied by a *q* (which also correctly predicts alternations in vowel realisations).

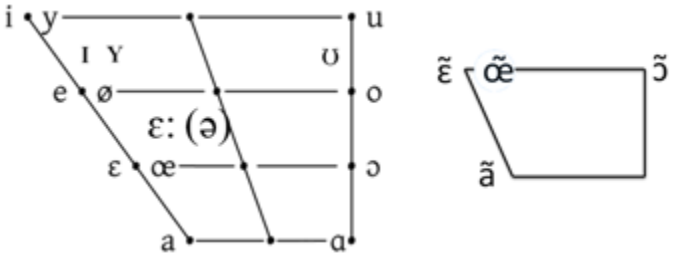

Figure 1: The monophthongal vowel inventory of Laurentian French.

	'revenue'	'returned'
[rœvœny]	✓	✓
[rœvny]	✓	✓
[rvœny]	×	✓
[ərvœny]	×	✓
[ərvny]	×	✓

Table 1: Contrasting schwas and epenthetic vowels using /rəvəny/ *revenu*.

References

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