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NASALIZATION IN CREOLE FRENCH

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This paper will attempt to show that a more satisfactory analysis of the phonological function and phonetic realization of nasalization in Creole French may be obtained if one departs from a view of phonological analysis anchored on the concept of the phoneme and if one adopts one in which the primary concerns are the indication of the choices available to the native speaker at any point in a sentence and the specification in the most economical way of the phonetic realization of sentences.¹ The data examined here are drawn from Haitian Creole French (HC) but the solution proposed applies on the whole *mutatis mutandis* to all other Creole French dialects.

The most explicit analysis of HC (Hall, 1953) posits five nasal vowels [*ĩ ã õ ò ã*], all of which except for [*ã*] bear a one-to-one relationship to some oral vowel counterpart. Seven oral vowels are assumed for rural varieties of HC including a tense versus lax contrast for the mid vowels, that is:

Oral Vowels			Nasal Vowels	
<i>i</i>	(<i>ü</i>)	<i>u</i>	<i>ĩ</i>	<i>ũ</i>
<i>é</i>	(<i>æ</i>)	<i>ó</i>		
<i>è</i>	(<i>è</i>)	<i>ò</i>	<i>ẽ</i>	<i>õ</i>
—	<i>a</i>		<i>ã</i> = [ə]	

Many dialects exhibit three front rounded vowels ([*ü æ è*]) but these do not bear on the analysis of nasalization and will be left out of consideration.

HC nasal vowels [*ĩ*] occur in more environments than do those of Standard French; in particular, they occur widely before syllable- and word-final nasal consonants (N). It might be supposed therefore that in HC nasalization assumes a greater differentiative role in the vowel system, but in fact the reverse obtains for the following reasons.

First, the high vowels [*ĩ*] and [*ũ*] occur infrequently and, except for the first person plural inclusive pronoun *nou* and the indefinite determiner *youn* as well as words pertaining to the vaudoun rites (*oungan, oumfò*), they occur only before N,

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e.g. *bounda* 'buttock', *pinga-ou* 'watch out!', *kachimbo* 'pipe'.² Second, while in HC, unlike Standard French, oral and nasal vowels co-occur before N, the number of attested contrasts is small. Table 1 shows a representative set of such contrasts and also illustrates the distribution of the mid vowels, both oral and nasal.

Chart 1. Distribution of Oral and Nasal Low and Mid Vowels

<i>CV</i>	<i>CṼ</i>	<i>CVN</i>	<i>CṼN</i>	<i>CVC</i>	<i>CṼC</i>
<i>šē</i> 'dear'	<i>šē̃</i> 'dog'	<i>šèn</i> 'chain' ~ <i>žèn</i> 'young'	<i>šēn</i> 'chain' <i>žēn</i> 'fast'		
<i>sa</i> 'that'	<i>šā̃</i> 'field'	<i>šam</i> 'charm' <i>pan</i> 'breakdown'	<i>šām</i> 'room' <i>pān</i> 'hang'	<i>pēs</i> 'pest' <i>šat</i> 'cat' <i>pat</i> 'paw'	<i>pēs</i> 'pliers' <i>pāt</i> 'slope'
<i>pó</i> 'pot' <i>pò</i> 'harbor'	<i>vā̃</i> 'wind' <i>pō̃</i> 'bridge'		<i>vān</i> 'sell' <i>pōn</i> 'lay eggs'		
<i>mó</i> 'word' <i>mò</i> 'dead'		<i>bòn</i> 'boundary' <i>bòn</i> 'maid' — <i>mòn</i> 'hill'	<i>bōn</i> 'good' <i>bōn</i> 'maid' <i>mōn</i> 'world'	<i>mòd</i> 'fashion'	<i>mōt</i> 'watch'

Third, one of the striking characteristics of HC is the diffusion of nasalization over contiguous sequences of vowels and consonants. This results in three types of alternations described variously as neutralization, free variation, and allophonic or phonemic effects of juncture or disjuncture (Hall, 1950; 1953; Taylor, 1947): (1) stops and fricatives are pre-nasalized optionally after nasal vowels, e.g. [*š^mpil*] 'a lot', [*š^mdyē*] 'Indian' [*šⁿgā̃*] 'vaudoun priest'; (2) vowels are partially or fully nasalized preceding or following N, e.g. [*tuné*]~[*tūnē*]~[*tūnē̃*] 'to turn'; (3) word-final *Ṽ* may be followed by velar closure, e.g. [*lō̃*]~[*lō̃ⁿ*] 'long'.

For any phonological analysis of HC to attain at least observational adequacy, it must account for contrasts of the type [*bōn*] 'good' versus [*bòn*] 'boundary', and it must also indicate where nasalization is optional, obligatory or not permissible. This paper proposes to meet these requirements by assigning to each HC grammatical form a single abstract underlying representation consisting of a string of distinctive feature matrices and formulating a set of ordered rules which transform the underlying representations into observable phonic features. The proposed analysis differs

² To represent HC forms we employ a modified version of the Faublas-Pressoir (ONEC) orthography. The following typographical conventions will be observed: forms cited in the orthography will appear in italics; forms between // are the result of the application of one or more PR; English glosses appear between ' '; [] indicate phonetic transcription; underlying representations appear in roman.

from existing ones in that nasalization is treated as a feature absent from the underlying representation and determined by length. The following underlying vowels are posited for HC:

	<i>i</i>	<i>u</i>	<i>e</i>	<i>o</i>	<i>a</i>	<i>á</i>	<i>é</i>	<i>ò</i>
diffuse	+	+						
compact			—	—	+	+	—	+
grave	—	+	—	+			—	+
long	—	—	—	—	—	+	+	+

To derive the nasal vowels we apply two phonological rules (PR). PR1

$$\left[\begin{array}{c} \check{V} \\ -\text{long} \end{array} \right] \rightarrow [+ \text{nasal}] \text{ in the env. } - \left\{ \begin{array}{l} \text{NX}\# \\ \text{NCX} \end{array} \right\}$$

(where N means any nasal consonant, C is any consonant, X any sequence of vowels or consonants or null and # word boundary) transforms any—long vowel followed by a nasal consonant to a \check{V} , e.g. šanm ‘room’ → [šānm], šenn ‘chain’ → [šēnm], šen ‘dog’ → [šēn]. PR1 of course does not apply to + long vowels which remain non-nasal before N, e.g. bôn ‘boundary’ → [bôn]. PR2, which can only be applied once to any grammatical form, deletes Ns that occur after a \check{V} and before #

$$N \rightarrow \emptyset \text{ in the env. } \left[\begin{array}{c} \check{V} \\ + \text{nasal} \end{array} \right] - \left\{ \begin{array}{l} (N) \\ (C) \# \end{array} \right\}$$

(where C means any consonant), e.g. šēnn # → [šēn], šānm # → [šām], šēn # → [šē] but telefōne # ‘to telephone’ → [telefōne].

Two types of \check{V} emerge from this analysis which we label *primary* and *secondary*. The former are derived from underlying sequences VN and occur before non-nasal consonants or before # while the latter are derived from underlying sequences VNN and occur before N. This distinction is reflected at the phonetic level where, according to preliminary spectrographic data, secondary \check{V} are not as fully or clearly nasalized as primary \check{V} ; as has also been shown secondary \check{V} are in some instances replaced by oral vowels. It is tempting to equate the distinction primary versus secondary \check{V} to the distinction \check{V} by cancellation (*annulation*) versus \check{V} by damping (*amortissement*) respectively proposed by Pierre Delattre (1967). For Delattre maximally distinctive \check{V} s result from the reduction of the strength of the first formant and requires in addition to the lowering of the velum a pharyngeal cavity of equal size to the velic cavity formed above the velum. This condition is met by \check{V} with a first formant of about 600 cps, the low mid vowels. Thus three interesting generalizations emerge from the proposed analysis: (1) only the mid vowels [ē ò] and the low vowel [ā] are primary \check{V} ; (2) the feature + long which blocks nasalization occurs in many words which ma

be considered peripheral to the core HC lexicon; (3) the presence of velar closure after final \tilde{V} and of pre-nasalization of stops and fricatives after \tilde{V} may be accounted for by the non-application of PR2, which allows the N to appear at the phonetic level.

The assignment of distinctive feature status to length rather than to nasalization also accounts for the disruption of complementary distribution between high-mid (tense) and low-mid (lax) vowels, that is, that together with [mó] 'word' and [mòd] 'fashion' we find [mò] 'dead'. PR3—5 displayed below assign + or — diffuse values (in articulatory terms, tense versus lax) to vowels which are unaffected by PR1—2

$$\begin{array}{l}
 \text{PR3: } \left[\begin{array}{l} - \text{compact} \\ + \text{long} \end{array} \right] \rightarrow \left[\begin{array}{l} - \text{diffuse} \\ - \text{compact} \\ (+ \text{long}) \end{array} \right] \\
 \text{PR4: } \left[\begin{array}{l} + \text{compact} \\ + \text{long} \end{array} \right] \rightarrow \left[\begin{array}{l} + \text{compact} \\ (+ \text{long}) \end{array} \right] \\
 \text{PR5: } \left[\begin{array}{l} - \text{compact} \\ - \text{long} \end{array} \right] \rightarrow \left\{ \begin{array}{l} \left[\begin{array}{l} - \text{diffuse} \\ - \text{long} \end{array} \right] \\ \left[\begin{array}{l} + \text{diffuse} \\ - \text{long} \end{array} \right] \end{array} \right. \text{ in the env. } \left. \begin{array}{l} \text{--- } C_1(CV)_0 \# \\ \text{--- } (CV)_0 \# \end{array} \right\}
 \end{array}$$

(where C_1 means one and only one consonant and $(CV)_0$ one or more sequences of vowel plus consonant).

All-compact vowels become-diffuse (lax) whereas short vowels become-diffuse (lax) or + diffuse (tense) depending on whether they occur in a checked or free syllable respectively. As a result tense and lax vowels contrast in open syllables: mo [mó] 'word' versus mô [mò] 'dead' or vole [vólé] 'to fly' or 'to steal' versus volê [vólê] 'thief' but mod [mòd] 'fashion' and pes [pès] 'pest'. The + compact long vowel \hat{a} remains unchanged, except that, as for the other underlying long vowels, it is realized with optional length and, in some dialects, with a following [r].

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DISCUSSION

Annan:

In my opinion it might be more practical to use a non-generative type of analysis but rather to employ a prosodic approach as practised in the London school which would allow the problem to be seen in its position in phonology.

Carton:

Je signale que dans certains patois et en français populaire dans le Nord de la France, le nombre des nasales du système est réduit à deux: un *ã* teinté de *õ* et un *ã* teinté de *ẽ*, allant ainsi jusqu'au bout des possibilités de la langue.

Goodman:

Why set up a feature of length for the vowel *a* when it is not present anywhere in the language and serves merely as a device to block nasalisation in such forms as *šam* "charm" versus *šãm* "room", a phenomenon just as well accounted for by the nasal versus oral vowel contrast.

PŘEMYSL JANOTA

Personal Characteristic of Speech

ACADEMIA — Transactions of the Czechoslovak Academy of Sciences — Social Science Series — Vol. 77 — No. 1/1967 — in English

The study is outcome of six years of research dealing mainly with modern phonetic methods. It discusses the personal characteristic of the auditory aspect of oral communication. The criterion for these personal characteristics is the ability of the listener to identify the speaker and to distinguish him from other speakers by the auditory characteristics of his speech, the colour of this voice, the so-called individual timbre.

The work is based on a complex of listening experiments, an analysis of the auditory aspect of spoken texts, and, last but not least, on synthesis of vowels and their auditory evaluation in confrontation with natural vowels. Work making use of synthetic vowels is described at greater length in the study and the author outlines the possibilities of using this method in solving general problems of phonetics of more general character.

BLANKA BOROVIČKOVÁ,
VLASTISLAV MALÁČ

The Spectral Analysis of Czech Sound Combinations

ACADEMIA — Transactions of the Czechoslovak Academy of Sciences — Social Science Series — Vol. 77 — No. 14/1967 — in English

The authors present the results of a research in speech acoustics achieved by them in recent years. Their investigation aimed at automatic speech identification with the help of computer. The study offers a detailed description of the acoustic structure of Czech sounds determined for the first time with the aid of modern experimental instruments.

The results achieved by the authors are applicable not only to linguistics and electroacoustics but also to psychology and phoniatriy.

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